MONTANA FISH, WILDLIFE & PARKS

ENVIRONMENTAL ANALYSIS
MEPA/NEPA CHECKLIST

MISSION. Montana Fish, Wildlife & Parks, through its employees and citizen commission, provides for the stewardship of the fish, wildlife, parks, and recreational resources of Montana, while contributing to the quality of life for present and future generations

All Montanans have the right to live in a clean and healthful environment. This brief environmental analysis is intended to provide an evaluation of the likely impacts to the human environment from proposed actions of the project cited below. This analysis will help Montana Fish, Wildlife & Parks to fulfill its oversight obligations and satisfy rules and regulations of both the Montana Environmental Policy Act (MEPA) and the National Environmental Policy Act (NEPA). The project sponsor has a responsibility to ensure that all impacts have been addressed. Some effects may be negative; others may be positive. Please provide a discussion for each section. If no impacts are likely, be sure to discuss the reasoning that led to your determination.

PART I. PROPOSED ACTION DESCRIPTION

1. Type of proposed action:

Development	_____
Renovation	_____
Maintenance	_____
Land Acquisition	_____
Equipment Acquisition	_____
Other (Forest Management)	X

2. If appropriate, agency responsible for the proposed action:

MT Fish, Wildlife & Parks

3. Name, address, phone number, and e-mail address of project sponsor:

MT Fish, Wildlife & Parks, 490 N. Meridian Road, Kalispell, MT 59901, (406) 752-5501

4. **Name of project:** West Shore, Finley Point & Lake Mary Ronan State Parks Forest Thinning Project

5. **If applicable:**

Estimated construction/commencement date: Fall/Winter 2007-08

Estimated completion date: Winter 2008

Current status of project design (% complete): Forest Health Prescription & draft environmental assessment 100% complete; implementation 0% complete.

6. **Location affected by proposed action (county, range, and township):**
West Shore State Park, Lake County - R21W, T26N
Finley Point State Park, Lake County - R19W, T23N
Lake Mary Ronan State Park, Lake County - R22W, T25N

7. **Project size; estimate the numbers of acres that would be directly affected that are currently:**

(a) Developed:
residential..... ___ acres
industrial .....___ acres

(b) Open Space/Woodlands/
Recreation.....___200 acres

(c) Wetlands/Riparian
Areas .....___ acres

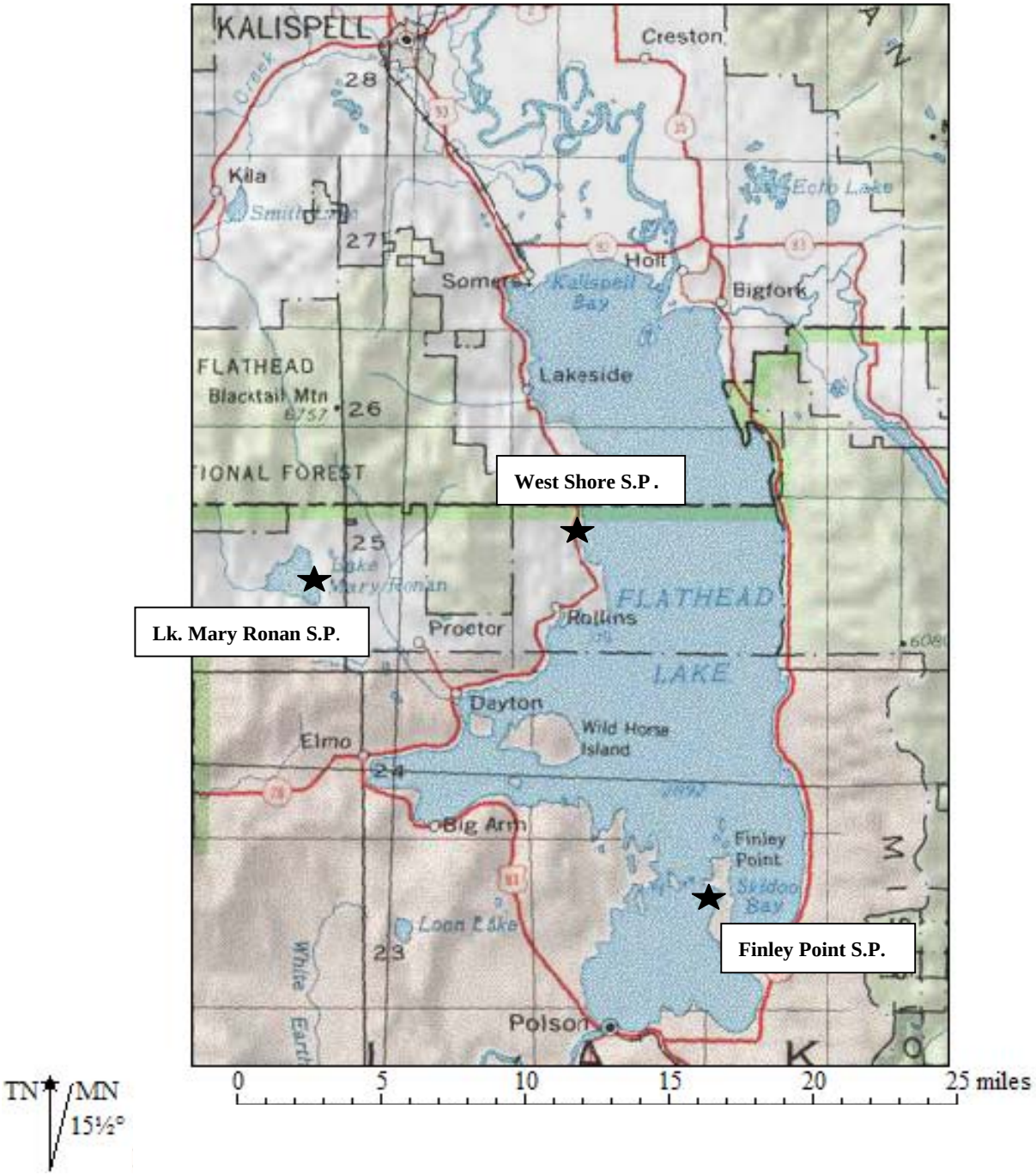
(d) Floodplain.....___ acres

(e) Productive:
irrigated cropland .....___ acres
dry cropland.....___ acres
forestry.....___ acres
rangeland .....___ acres
other .....___ acres

8. **Map/site plan:** Attach an original 8½" x 11" or larger section of the most recent USGS 7.5' series topographic map showing the location and boundaries of the area that would be affected by the proposed action. A different map scale may be substituted if more appropriate or if required by agency rule. If available, a site plan should also be attached.

Site plan maps of each park showing project boundaries are found in Appendices A, B & C, Forest Health Prescriptions.

Figure 1. Project Site Location Map



9. Narrative summary of the proposed action or project, including the benefits and purpose of the proposed action:

The purpose of this action is to complete a forest-thinning project at West Shore, Finley Point, and Lake Mary Ronan State Parks. The combined total acreage proposed for treatment is approximately 200 acres. The objective is to maintain the property over time for safe public use, with a forest cover that is healthy and insect, disease, and fire resistant. A healthy stand, with a mixture of tree species native to the site and with a diversity of tree sizes and ages, is the desired future condition. The long-term goal is to restore the site to the historic stand structure of large, open, park-like stands dominated by ponderosa pine and western larch, with some Douglas fir. The specific objectives of this project include:

1. Create a forest structure that improves forest resilience to insect and disease infestations.
2. Reduce fuel loads, ladder fuels, and lower the risk of stand-replacement fire in order to protect the park and adjacent private lands.
3. Remove trees that are potentially hazardous to park visitors and facilities.
4. Restore the parks to the historic, large, open stand structure.
5. Maintain and improve the aesthetic value of the parks' forests.

West Shore, Finley Point, and Lake Mary Ronan (LMR) State Parks are located in areas that have seen rapid growth in recent years. All are surrounded by private property, both in large parcels and small housing lots. No forest management has been done at these sites, other than hazardous tree removal, for at least 35 years. As a result, most portions of the existing forests are dense and overcrowded, with stands dominated by Douglas fir.

In 2003 Fish, Wildlife & Parks (FWP) contracted with a forester to look at the forest environment on all lands managed by FWP's Parks Division. The subsequent environmental assessment and Region One Vegetation and Hazard Tree Management Plan were adopted on September 3, 2003. In the assessment of FWP properties, West Shore, Finley Point, and Lake Mary Ronan State Parks were identified as future sites for forest management. In the 2003 plan, the recommended treatment for these areas was a group selection harvest favoring ponderosa pine and the thinning of dense Douglas fir stands to 25-30-foot spacing. Because the recommended prescription area at the aforementioned parks is over 10 acres, a separate environmental assessment is required before a treatment can be done in these areas, hence this environmental assessment.

All three parks in varying degrees have similar forest conditions. Due to the high tree density in certain areas of the parks, competition for light, water, and nutrients is great. Combined with past drought conditions, the resultant overstocked stands are more susceptible to dwarf mistletoe, root rot, and bark beetles. Tree crowns and root systems need adequate site resources in order to resist insect and disease attack. Tree crowns that are not touching will have adequate site resources to grow and remain vigorous as well as provide a crown-fire-resistant stand. There will be an effort to maintain a diversity of species sizes and ages of trees on the site to provide replacement as some large trees

reach the end of their life cycle. In addition, consideration will be given to visual and noise buffers along highways where identified as desirable. Only those trees determined to be hazardous or necessary for vista maintenance will be removed along the lakeshore.

The preferred climax species for these sites, given topography, elevation, soil type, and moisture requirements, are ponderosa pine and western larch. Douglas fir are not the desired climax trees in a heavily used public recreational area, as they are susceptible to wind load due to their shallow root system and are not as fire or disease resistant. Therefore this project has been designed to reduce the density of Douglas fir to allow existing ponderosa pine and western larch to grow and remain healthy.

Each park has the same identified methods of treatment although the units will vary in size from park to park. Those treatment methods are as follows:

1. Forest health restoration
2. Hazardous tree removal and visual enhancement
3. Roadside fuel hazard reduction

In units earmarked for forest health restoration, the primary objective is to modify the existing vegetation to mitigate the effects of overstocking, dwarf mistletoe, and bark beetles within the park forest and to lower the wildfire hazard. Additional benefits include lowering the competition for soil moisture and nutrients and increasing the vigor of residual trees. Protecting old-growth trees and creating conditions favorable for the reestablishment of western larch and ponderosa pine are also desired outcomes of the project. This will be accomplished by selective harvesting of trees in all size classes. The resulting forest will be a mosaic of multilayered forest structures interspersed with small openings.

In units identified for hazardous tree removal and visual enhancement, the primary objective is to remove hazardous trees, create small openings or lanes to open up views of the lake, and to modify the existing vegetation to mitigate the effects of overstocking, bark beetles, dwarf mistletoe, and to lower the wildfire hazard. Additional benefits include lowering the competition for soil moisture and nutrients and increasing the vigor of residual trees.

The third type of treatment, roadside fuel reduction, has a primary objective of modifying the existing vegetation to reduce the wildfire hazard. This will include tree thinning, tree pruning, and disposal of cut trees and limbs from the project areas. Thickets of sapling and pole-sized conifer trees will be thinned to provide 10-foot-or-greater space between tree crowns. This activity reduces the potential for a crown fire to move laterally between tree crowns. Commercial-size trees in poor-to-fair biological condition will also be removed. All retention trees will be pruned to reduce the probability of a surface fire climbing into tree crowns. The fuel hazard reduction treatment is also designed to reduce the risk of beetle-caused tree mortality in the project area. Thinning susceptible forest areas, prior to beetle infestation, can significantly reduce beetle-caused mortality by creating environmental conditions less

favorable to beetles. Reducing wildland fuels throughout the parks will improve access for emergency vehicles and provide a safer working environment for firefighters who may be involved with fire suppression and structure protection on adjacent lands. Efforts to reduce the fire hazard and improve overall forest health are intended to have long-term benefits for park visitors and homeowners residing close to the park.

In all three units, removed trees will primarily be those in poor-to-fair biological condition. No ponderosa pine or western larch will be removed with the exception of trees with mistletoe or recent beetle sign. Healthy ponderosa pine and some western larch will be cleared of competing Douglas fir for 30 to 50 feet. Interplanting ponderosa pine and western larch in these openings is planned. Standing dead trees (snags) and larger downed logs will be retained when possible. Trees of all age classes with good crowns and potential for growth and longevity will be left. Except as mentioned, there are no spacing requirements for retention trees, resulting in a random, patchy forest structure. Leave trees are selected based on species, stem form, genetic traits, and location within the forest canopy. Some trees with dead tops, mistletoe, sweep, forks, and crook will be intentionally left. These "character trees" add structural diversity to the forest and are often utilized by wildlife. All cut trees will be marked with orange paint or flagging.

Treatment will be implemented through a commercial timber-thinning sale, specifying mechanical harvesters, and logs and slash transported to designated loading or disposal areas. The commercial thinning will take place in the fall and winter to minimize ground and vegetative disturbance. Native grass/forbs seeds will be sown in all areas of ground disturbance (see Appendix F). Stumps will be cut to 4 inches or less. The commercial value of the excess trees on the site should cover the cost of completely disposing of the slash resulting from the harvested trees as well as the natural accumulation of excess ground fuels.

Precautions will be taken to close roads during the project to prevent vehicles from entering. Signs will be prominently displayed informing visitors of the project and hazardous conditions. Areas will be closed to public access while work is being performed and machinery is operated or if conditions are deemed unsafe.

Weed Management

Spotted knapweed, thistles, and hound’s-tongue were observed within all project areas. All guidelines and recommendations for managing noxious weeds in Region One's noxious weed management program will be followed. These include:

1. Power washing of any vehicle or equipment that will be driven off-road prior to arrival on the property.
2. Any logging and thinning activities, which disturb mineral soil, will be seeded with a native seed mix recommend by the USDA Natural Conservation (see Appendix F).
3. Use a combination of mechanical, biological, and chemical controls.

(See Appendices A, B & C for the complete prescriptions for West Shore, Finley Point, and Lake Mary Ronan State Parks.)

10. Description and analysis of reasonable alternatives (including the required no-action alternative) to the proposed action, whenever alternatives are reasonably available and prudent to consider, and a comparison of the alternatives:

Alternative A: No action.

Action: FWP would not do forest management at West Shore, Finley Point, and Lake Mary Ronan State Parks and would let the natural progression take place.

Impacts: Dense stands of predominantly Douglas fir would be less vigorous and continue to be more susceptible to fir beetle, dwarf mistletoe, and root rot. Competition for nutrients and moisture would result in many trees dying out.

Dead and dying trees would add fuel loads in the park, increasing the likelihood of stand-replacement fire. Deadfall and ladder fuels would increase the possibility of a crown fire, which could threaten adjacent properties.

Because beetle-infested trees will not be removed, beetles will continue to disperse from currently impacted trees, causing more trees to be attacked, with potential spillover to trees on adjacent lands.

Dead and dying trees could become hazardous to recreational users and facilities near developed areas.

The long-term aesthetics of the park will be impacted. As ponderosa pine are smothered due to lack of light, they will die, leaving Douglas fir the predominant species. Since the forest cover will remain dense, little new tree growth will be generated in the understory. This will lead to a homogenous forest of one age class, which reduces diversity and is more at risk to stand-replacement events.

Alternative B: Complete the prescription as recommended for one park with other parks to follow over a multiyear period.

Action: This alternative would address the major concerns at a particular park by use of three different treatment methods. These have been identified as those that focus on 1) forest health and restoration, 2) hazardous tree removal and visual enhancement, and 3) roadside fuel reduction. The park has been divided into units in which one of the above treatment methods would be utilized. The alternative would remove dead and dying trees from the park through selective harvesting of all size classes, leaving the remaining trees more resistant to insect and disease infestation. It would focus on reducing the density of the Douglas fir, the predominant species, and favor the restoration of ponderosa pine and western larch to more historic levels. Most of the trees with dwarf mistletoe would be removed to slow the spread of that parasite. Spaces would be opened around ponderosa pine to promote growth and regeneration. Larger dead snags would be left for wildlife habitat.

Fir beetle, dwarf mistletoe, and root rot will be reduced, leaving the remaining trees more resistant to attack. With removal of the beetle-infested trees, bark beetle outbreaks will be reduced. Over time, the forest cover will become more vital and fire and wind resistant. A mixture of tree species, sizes, and ages will be achieved. Over an extended period of time the site will be restored to a large, more historic, open stand dominated by ponderosa pine, with a mix of western larch and some Douglas fir.

Because crown density and fuel loads will be reduced, the risk of stand-replacement fire will be lowered. Ponderosa pine, which is highly resistant to ground fires, will not be negatively affected, and adjacent private lands would not be jeopardized. This alternative will open up space around remaining ponderosa pine, allowing for more vitality and regeneration. These trees will resist disease and insects better and will propagate more ponderosa pine in this site. The diversity and age class structure will be enhanced, with a mixture of tree species, sizes, and ages to provide replacement trees as some large trees die off over time.

Reducing wildland fuels throughout the park will improve access for emergency vehicles and provide a safer working environment for firefighters who may be involved with fire suppression and structure protection near the park. Efforts to reduce the fire hazard and improve overall forest health are intended to have long-term benefits for park visitors and homeowners residing adjacent to the park.

Drawbacks to the project center primarily around the spread of noxious weeds. Timber projects will cause disturbance to soils. If noxious weed seeds are present, it will result in their proliferation. Noxious weeds, especially knapweed, thistle, and hound's-tongue, have been observed at each location and are known to occur in localized moderate-to- heavy infestations. Treatment and monitoring for weeds will be an ongoing action. Costs associated with chemicals and labor will increase expenditures and will require additional funding and labor over time.

Alternative C: Complete the prescriptions as recommended for all three parks.

This alternative has the same action and benefits as alternative B, but is greater in scope as it involves all three state parks versus only one. The primary benefit of this method is derived from the economy of scale. In the spring of 2006 a project was proposed to thin West Shore State Park. An environmental assessment was completed and the project was released for contract bids. The cost of the project turned out to be more than what was initially anticipated because the value of the timber to be harvested was not as great as initially estimated due to the lack of sufficient volume of board feet and overabundance of smaller pulp-type material. Consequently, the project was scrapped because of higher costs and insufficient Department funding. Therefore one park by itself may not have sufficient timber value to make the project cost-effective. By combining all three parks under one project there is a greater chance that the value of all the timber combined will pay for the work involved, which results in less cost to the Department. Additionally, if parks are done separately over a multiyear period, then the process from proposal to completion will need to be completed each time, resulting in additional costs of time and labor.

Finally, recent events bear out the need for projects such as these to be completed sooner than later. Prolonging the treatment of some parks will only increase the chances of bug and disease infestations and stand-replacement fire, thereby placing the safety of visitors and park facilities and the property of adjacent landowners at risk.

Drawbacks to the project center primarily around the spread of noxious weeds and additional costs. Since the project is an increase in scope to cover three state parks versus one, this will only add to the cost of weed control and monitoring. This will require more funding and staff time. Treatment and monitoring for weeds will be an ongoing action and hence the expenditures will rise proportionally to the amount of area requiring treatment.

11. Listing of each local, state, or federal agency that has overlapping or additional jurisdiction:

(a) Permits		
Agency Name:	Permit:	Date Filed:

(b) Funding	
Agency Name: MT Fish, Wildlife & Parks	Funding Amount:

(c) Other Overlapping or Additional Jurisdictional Responsibilities	
Agency Name: Dept. of Natural Resources & Conservation	Type of Responsibility: Wildfire Suppression
Confederated Salish & Kootenai Tribes	Shoreline and cultural protection, wildfire suppression
Lake County	Shoreline protection
MT State Historical Preservation Office	Archeological & cultural site protection
Dept. of Environmental Quality	Air Quality (January-March)

12. List of agencies consulted during preparation of this environmental checklist:

MT Dept. of Natural Resources and Conservation

13. Name of Preparer(s) of this environmental checklist:

Jerry Sawyer, FWP, Region One Parks Division
Jim Cancroft, Northwest Management, Inc., Contract Forester

14. Date submitted: September 4, 2007

PART II. ENVIRONMENTAL CHECKLIST

PHYSICAL ENVIRONMENT. At the bottom of this "Land Resources" checklist, provide a narrative description and evaluation of the cumulative and secondary effects on land resources. Even if you checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects of the action as well as the long-term effects. Attach additional pages of narrative if needed.

1. LAND RESOURCES **Will the proposed action result in:**	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Soil instability or changes in geologic substructure?			X		Y	1a.
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil, which would reduce productivity or fertility?			X		Y	1b.
c. Destruction, covering, or modification of any unique geologic or physical features?		X				1c.
d. Changes in siltation, deposition, or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
f. Other						

NARRATIVE DESCRIPTION AND EVALUATION:

Timber removal will occur during the late fall and winter to minimize ground disturbance, compaction, erosion, and siltation. Any disturbed areas will be reseeded with native grasses and forbs to reduce erosion and compaction (see Appendix F). Any invading noxious weeds will be managed through the Regional Noxious Weed Program. All seed mixes will reflect those native species that currently exist on-site.

1a. A short-term effect caused by the use of mechanical equipment to thin and transport trees to landings may lead to some soil instability. Ground disturbance will be mitigated by utilizing existing trails whenever possible; working with mechanical equipment on frozen ground when possible, and avoiding skidding straight up and down slopes; utilizing cut-to-length logging systems; and avoiding areas with thin and sensitive soils. In the long term, all areas of exposed mineral soils would be seeded with a native grass/forb seed mix. There would be no short- or long-term effects on the overall geologic substrate.

1b. There is potential for short- and long-term effects on soil compaction and erosion. Landings or areas of slash accumulation are subject to soil compaction. To mitigate these effects, landings will be located where hardened sites currently exist, such as parking areas, old roadways, or abandoned sites where compacted conditions are already present due to previous human-caused disturbances. Existing trails would be used whenever possible to transport material. Designated skid trails would be mechanically raked and recontoured if necessary. These skid trails would also be planted with a native grass/forbs mix.

1c. No unique geologic or physical features have been identified in the project areas. Areas identified for treatment are similar to surrounding terrain found outside the unit boundaries.

PHYSICAL ENVIRONMENT. At the bottom of this "Air" checklist, provide a narrative description and evaluation of the cumulative and secondary effects on air resources. Even if you checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects of the action as well as the long-term effects. Attach additional pages of narrative if needed.

2. AIR **Will the proposed action result in:**	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Emission of air pollutants or deterioration of ambient air quality? (Also see 13 (c))			X		Yes	2a.
b. Creation of objectionable odors?			X		Yes	2b.
c. Alteration of air movement, moisture, or temperature patterns, or any change in climate, either locally or regionally?			X		Yes	2c.
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?			X			
e. Any discharge that will conflict with federal or state air quality regs?		X				2e.
f. Other		X				

NARRATIVE DESCRIPTION AND EVALUATION:

2a and b: Machinery used during the timber removal project will create noise and emissions. Additionally, the potential exists for creation of dust from thinning operations. This project will be done in the late fall and winter when park visitation is at its lowest to lessen disturbance. In addition, care will be taken to limit working hours to minimize disturbance to adjacent neighbors. All generated noise and emissions are temporary.

Burning of slash will result in creation of smoke and temporary effects on air quality, which may affect the health of individuals. Grinding of slash will be the preferred method of slash disposal when feasible. Any burning will occur during periods when conditions are suitable for good air dispersion.

2c. A secondary effect of conducting a thinning or harvesting project within the park forest is the opening up of the canopy, which could lead to increases in ambient air temperature and increased wind movement. Due to the limited amount of acres involved in each park project, the effect of thinning on temperature and air movement is considered minor. Nonetheless these effects can be mitigated by keeping openings to less than 1 acre in size and making them irregular in shape. Tree removal would be variable and random, with clumps of trees left within thinned areas. Spacing would be determined by the aspect, the location within the park, and presence of healthy trees.

2e. All applicable air shed or burning permits will be acquired before any burning takes place.

PHYSICAL ENVIRONMENT. At the bottom of this "Water" checklist, provide a narrative description and evaluation of the cumulative and secondary effects on water resources. Even if you checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects as well as the long-term effects. Attach additional pages of narrative if needed.

3. WATER **Will the proposed action result in:**	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Discharge into surface water or any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity?		X				
b. Changes in drainage patterns or the rate and amount of surface runoff?			X		Yes	3b.
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water-related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?		X				
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. Effects to a designated floodplain?		X				
m. Any discharge that will affect federal or state water quality regulations?		X				
n. Other:		X				

NARRATIVE DESCRIPTION AND EVALUATION:

3b. There is no running surface water at any of the three parks proposed for treatment. The majority of the thinning operations at the individual parks will take place away from their respective lake frontage. No trees will be removed along shorelines except those determined to be hazardous to developed sites. Each park has a series of small draws that retain snow longer than the surrounding area and subsequently contain vegetation adapted to the increased soil moisture. In these draws mechanical equipment would be restricted. The cumulative effects on surface runoff would be minimal. In the short term there may be an increase in surface runoff across existing trails that are used for skidding or transporting mechanical equipment. This would be mitigated by conducting thinning or harvesting operations when the ground is snow-covered, frozen, or firm. Designated skid trails would be located on the contours and along natural breaks, and would not go straight up and down the slope, thus minimizing the chance of overland flow of surface water. If erosion does occur on steeper slopes due to heavy spring rains, steps will be taken to reduce or mitigate that erosion through the use of straw bails, netting, or other erosion barriers to limit runoff. All disturbed areas will be reseeded with native grass/forbs seed to reduce chances for erosion. All seed mixes will reflect those native species that currently exist on-site (see Appendix F).

PHYSICAL ENVIRONMENT. At the bottom of this "Vegetation" checklist, provide a narrative description and evaluation of the cumulative and secondary effects on vegetative resources. Even if you checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects as well as the long-term effects. Attach additional pages of narrative if needed.

4. VEGETATION Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Changes in the diversity, productivity, or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?			X		Yes	4a.
b. Alteration of a plant community?			X		Yes	4b.
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?			X		Yes	4e.
f. Effects to wetlands or prime and unique farmland?		X				
g. Other:		X				

NARRATIVE DESCRIPTION AND EVALUATION:

4a & b. The cumulative effect of this project on the changes in diversity, productivity, and abundance of plant species is considered positive. Although each unit treatment area varies from one to the other at individual parks, in general it can be stated that the basal area per acre in at least one identified unit at each park exceeds threshold levels for tree density, making these areas more susceptible to insect and disease infestations. Each park's fire risk is moderate to high with significant accumulated ground and ladder fuels. Additionally, each park's forest vegetation type is predominantly Douglas fir, with minor components of ponderosa pine and western larch. Douglas fir seedlings and saplings surround the majority of the ponderosa pine. Conifer regeneration is sparse under the closed canopy of the mature Douglas fir, though scattered clumps of seedling and sapling-sized Douglas fir are present in open areas. Ponderosa pine and western larch regeneration is absent in most areas. The effects of this project will maintain or improve the health and vigor of the overall stand, provide better species diversity and increase the potential for regeneration, and reduce potential catastrophic fire risk through fuel reduction.

(See Appendices A, B & C for individual park prescriptions and forest descriptions.)

4e: There is a possibility for the introduction of noxious weeds in disturbed soils. Disturbed soils will be reseeded with native vegetation upon completion of the project and monitored. The area is managed under Region One's noxious weed management program, and any occurrence of noxious weeds will be treated chemically, biologically, or mechanically under that program.

PHYSICAL ENVIRONMENT. At the bottom of this "Fish/Wildlife" checklist, provide a narrative description and evaluation of the cumulative and secondary effects on fish and wildlife resources. Even if you checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects as well as the long-term effects. Attach additional pages of narrative if needed**.**

5. FISH/WILDLIFE Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Deterioration of critical fish or wildlife habitat?		X				5a.
b. Changes in the diversity or abundance of game animals or bird species?			X			5b.
c. Changes in the diversity or abundance of nongame species?			X			5c.
d. Introduction of new species into an area?		X				
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest, or other human activity)?			X			5g.
h. Adverse effects to threatened/endangered species or their habitat?		X				
i. Introduction or exportation of any species not presently or historically occurring in the affected location?		X				
j. Other:		X				

NARRATIVE DESCRIPTION AND EVALUATION:

5a. All thinning activity will be sufficiently away from the shoreline so as to have no effect on any fish habitat. Only identified hazardous trees in developed areas will be removed along shorelines. No critical wildlife habitat will be affected.

5b and c. With the change in tree density, there may be some minor impacts to the types or diversity of bird species in this particular park. Effect on the overall bird types or densities in the area will be insignificant. Mature snags would not be harvested, and several areas of dense canopy would remain within the park. Project goals would increase wildlife forage by diversifying understory plant communities. Areas that provide significant thermal and bedding security or travel corridors for game animals would be left largely intact.

5g. Human activity associated with logging and rehabilitation would cause short-term increases in wildlife stress in the project unit. However, there exist large acreages of similar habitat in the surrounding area. Displacement of animals during operations is not expected to have a significant impact. Wildlife biologists will be involved in reviewing the prescription as laid out on the ground.

HUMAN ENVIRONMENT. At the bottom of this "Noise/Electrical Effects" checklist, provide a narrative description and evaluation of the cumulative and secondary effects of noise and electrical activities. Even if you checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects as well as the long-term effects. Attach additional pages of narrative if needed.

6. NOISE/ELECTRICAL EFFECTS Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Increases in existing noise levels?			X			6a.
b. Exposure of people to severe or nuisance noise levels?			X			6b.
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other:		X				

NARRATIVE DESCRIPTION AND EVALUATION:

6a and b: Machinery used during the timber removal project will create noise and emissions. This project will be done in the late fall and winter when visitation is at its lowest to lessen disturbance. Workers will be exposed to intermittent noise levels that will require use of hearing protection.

In addition, care will be taken to limit working hours to minimize disturbance to adjacent neighbors. At West Shore State Park, consideration will be given to leaving an undisturbed vegetative strip along Hwy 93 to maintain a visual and noise buffer between the highway and recreation sites and hiking trails.

HUMAN ENVIRONMENT. At the bottom of this "Land Use" checklist, provide a narrative description and evaluation of the cumulative and secondary effects on land use. Even if you checked "none" in the table, explain how you came to that conclusion. Attach additional pages of narrative if needed. Consider the immediate, short-term effects as well as the long-term effects.

7. LAND USE Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. A conflict with a designated natural area or area of unusual scientific or educational importance?		X				
c. A conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on, or relocation of, residences?		X				
e. Compliance with existing land policies for land use, transportation, and open space?		X				
f. Increased traffic hazards, traffic volume, or speed limits or effects on existing transportation facilities or patterns of movement of people and goods?			X		Yes	7f.
g. Other:		X				

NARRATIVE DESCRIPTION AND EVALUATION:

7f. A temporary increase in industrial/commercial traffic would be associated with this project. Equipment-hauling trucks and log-and-chip-hauling trucks would be active in the area. The project will occur during the lowest period of park visitation. Additionally, appropriate traffic and hazard signing would be implemented to minimize conflict. Temporary closure of some interior park roads may occur if necessary.

HUMAN ENVIRONMENT. At the bottom of this "Risk/Health Hazards" checklist, provide a narrative description and evaluation of the cumulative and secondary effects of risks and health hazards. Even if you checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects of the action as well as the long-term effects. Attach additional pages of narrative if needed.

8. RISK/HEALTH HAZARDS Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?			X		Yes	8a.
b. Effects on existing emergency response or emergency evacuation plan or create need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?			X		Yes	8c.
d. Disturbance to any sites with known or potential deposits of hazardous materials?		X				
e. The use of any chemical toxicants?			X			8e.
f. Other:			X			8f.

NARRATIVE DESCRIPTION AND EVALUATION:

8a: The vehicles utilized during the timber operations use various petroleum distillates. Care will be taken to prevent spills. If any significant spills occur, soils saturated with oils will be removed.

8c. This project would create temporary hazards associated with tree falling and equipment operation for material removal and rehabilitation. During the operational phase of this project, visitor access to the project area will be restricted with signing and barricades. Professional personnel, knowledgeable in safety practices and procedures to protect themselves, will be used while completing this work. People with respiratory illness could experience a temporary health hazard resulting from smoke. Burning, when necessary, will occur during the period of lowest visitation and when weather conditions are most favorable. All applicable air shed and burn permits would be obtained.

8e. Herbicide application would create minor, temporary hazards during the rehabilitation phase and subsequent noxious weed treatments. Herbicide application would be conducted by state-certified applicators and would follow all pertinent laws and restrictions. Temporary signing would be used following applications to warn or restrict visitors.

8f. There will be a positive impact through the lowering of risk of catastrophic stand-replacement wildfire due to reduction in potential fuels in the project area.

HUMAN ENVIRONMENT. At the bottom of this "Community Impact" checklist, provide a narrative description and evaluation of the cumulative and secondary effects on the community. Even if you checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects as well as the long-term effects. Attach additional pages of narrative if needed.

9. COMMUNITY IMPACT Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?			X			9c.
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?			X		Yes	9e.
f. Other:		X				

NARRATIVE DESCRIPTION AND EVALUATION:

9c. There are no anticipated, significant impacts to the community as a whole from these operations. However, work will be performed by contract, which will benefit the selected business and result in additional income to those involved with the project.

9e. A temporary increase in industrial traffic would be associated with this project. Equipment-hauling trucks and log-and-chip-hauling trucks would be active in the area. Appropriate traffic and hazard signing would be implemented to minimize conflict.

HUMAN ENVIRONMENT. At the bottom of this "Public Services/Taxes/Utilities" checklist, provide a narrative description and evaluation of the cumulative and secondary effects on public services, taxes and utilities. Even if you checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects as well as the long-term effects. Attach additional pages of narrative if needed.

10. PUBLIC SERVICES/TAXES/UTILITIES Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. An effect upon, or result in a need for new or altered, governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If so, specify:		X				
b. Effects on the local or state tax base and revenues?		X				
c. A need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Increased used of any energy source?		X				
e. Other.						
Additional information requested:						
f. Define projected revenue sources.	See 10 f. below					
g. Define projected maintenance costs.	See 10g. below					

NARRATIVE DESCRIPTION AND EVALUATION:

10f. It is anticipated that the sale of the harvested timber will provide funding for the project.

10g. Projected Maintenance Costs:	Acres	Cost/Acre	Total
Noxious Weed Control	50	140.00	$7,000
Landing and Skid Trail Restoration	10	160.00	$1,600
Tree/Shrub/Grass Restoration	20	100.00	$2,000
			$10,600

Maintenance cost estimates are based on Alternative C. Costs would be substantially lower for Alternatives A & B. Costs are for initial year following project. It is anticipated that weed control costs will drop to $4,000-$4,500 annually in years two and three.

HUMAN ENVIRONMENT. At the bottom of this "Aesthetics/Recreation" checklist, provide a narrative description and evaluation of the cumulative and secondary effects on aesthetics & recreation. Even if you checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects as well as the long-term effects. Attach additional pages of narrative if needed.

11. AESTHETICS/RECREATION Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?			X			11a.
b. Alteration of the aesthetic character of a community or neighborhood?			X			11b.
c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach tourism report.)			X			11c.
d. Adverse effects to any designated or proposed wild or scenic rivers, trails, or wilderness areas?		X				
e. Other:		X				

NARRATIVE DESCRIPTION AND EVALUATION:

11a, b & c: There will be temporary effects to visual quality during the course of thinning operations. Timber thinning at the various sites will alter the current look to varying degrees for a particular park, based on the specified type of treatment. Where forest health improvement is specified, dense closed areas will be replaced by more open environments with greater tree crown spacing. Fuel reduction zones will show considerably less downed timber and ladder fuels. Hazardous tree removal will have negligible effect on visuals.

Disturbance from thinning operations will take one to three years to recover. In disturbed areas, seeding will occur with native grasses/forbs to lessen these impacts. Where necessary, seedling ponderosa pine and western larch will be planted to encourage species diversity. Stumps will be cut to a maximum of 4 inches in height where feasible to lessen visual impacts. Grinding of slash will be the predominant method of slash disposal. If burning is required, burning boats will be used when possible to eliminate burn piles and subsequent blackened areas. Some slash piles may be burned when terrain or accessibility discourages the above alternatives. Resultant burn sites will be scraped and reseeded.

At West Shore State Park, consideration will be given to a buffer along Highway 93, which will be feathered into the prescription area to reduce visual and noise impacts for state park users. While efforts will be taken to keep visual impacts to a minimum, impacts will nevertheless occur. Approved forest prescriptions will be followed to create a multilayered forest structure interspersed with small openings. The less dense forest will be a visual alteration, and whether that is a positive or negative will depend on who is viewing the site. The Parks Division mandate is to manage park areas in as near a natural condition as possible. This project is intended to help restore historic species type and stand densities. Benefits include reduced fuel loads and the lowering of the risk of stand-replacement fire.

There will be no impact on tourism opportunities at the site. See Appendix D for the Tourism Report.

HUMAN ENVIRONMENT. At the bottom of this "Cultural/historical Resources" checklist, provide a narrative description and evaluation of the cumulative and secondary effects on cultural/historical resources. Even if you checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects as well as the long-term effects. Attach additional pages of narrative if needed.

12. CULTURAL/HISTORICAL RESOURCES Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Destruction or alteration of any site, structure, or object of prehistoric, historic, or paleontological importance?		X				
b. Physical changes that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. Adverse effects to historic or cultural resources?		X				
e. Other:		X				

NARRATIVE DESCRIPTION AND EVALUATION:

12a-e. No effects on historical or cultural resources are anticipated. State archeological and cultural specialists will be consulted prior to the start of the project. See Appendix E for State Historic Preservation clearance letter.

HUMAN ENVIRONMENT. At the bottom of this "Summary Evaluation of Significance" checklist, provide a narrative description and evaluation of the cumulative and secondary effects. Even if you have checked "none" in the table, explain how you came to that conclusion. Consider the immediate, short-term effects as well as the long-term effects. Attach additional pages of narrative if needed.

13. SUMMARY EVALUATION OF SIGNIFICANCE Will the proposed action, considered as a whole:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources which create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?			X		Yes	13b.
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. Have organized opposition or generate substantial public controversy?		X				
Additional information requested:						
g. List any federal or state permits required.						

NARRATIVE DESCRIPTION AND EVALUATION:

13b: Timber removal is hazardous. Precautions will be taken to close roads during the project to prevent non-authorized vehicles from entering work zones. Signs will be prominently displayed informing visitors of the project and hazardous conditions. Areas will be closed to public access while work is being performed and machinery is operated or if conditions are deemed unsafe.

The goals of this project are in keeping with FWP's mandate to protect the state's natural resources by managing lands in a responsible manner. Forest management is an integral part of the agency's mission as a land steward. Timber thinning for forest health and reduction of catastrophic fire risk fulfills a public need born out by recent bark beetle outbreaks and fire events in the Flathead Valley and surrounding areas. There will be temporary, short-term effects while areas recover from disturbance. Long-term effects will be positive, with resultant vigorous, insect- and disease-resistant forests with reduced catastrophic fire risk.

PART III. ENVIRONMENTAL CHECKLIST CONCLUSION SECTION

1. Discuss the cumulative and secondary effects of this project as a whole (see glossary for definition of cumulative effects).

Due to the limited size of the project at individual park locations, there are no anticipated cumulative impacts as defined in the glossary. This project has been designed as a stewardship program aimed at conserving outdoor recreation opportunities and wildlife habitat. The positive secondary effects of the various treatment methods include:

- Forest stand age class and species diversification.
- Understory diversity.
- Promotion of wildlife habitats.
- Long-range conservation of park aesthetics.
- Diminished fuel-loading potential.
- Diminished parasite and disease infestation of forest conifers.
- Promotion of safer developed areas.
- Restoration to the historic stand structure of large, open, park-like stands dominated by old growth ponderosa pine, western larch, and Douglas fir.

Visitors to any of the three state parks would experience a change of landscape within treated areas from direct impacts including forest openings, stand thinning, ground disturbance, and temporary closures or restrictions related to operational or rehabilitation projects. Surrounding property owners would benefit as a result of reduced fuel loads and lower risk of wild fire and bark beetle infestation onto adjoining lands.

Secondary effects also include the possibility of noxious weed infestation where equipment has disturbed soils or when slash piles are burned. This impact can be mitigated through seeding with native grasses and chemical treatment of locations if necessary. However, in turn, the additional cost of weed control will have an effect on the Parks operations budget. Currently it is unknown what the result will be, but it is likely that some other location or need will be postponed or only partially met as an outcome of the reallocation of available funds.

2. Based on the significance criteria evaluated in this environmental checklist (Part II), is an EIS required?

YES _____

NO __X___

If an EIS is not required, explain why the current checklist level of review is appropriate.

Due to the previously completed Region One programmatic environmental assessment, and the level of activity expected from this action, an environmental assessment is the correct level of analysis. No significant impacts are present that cannot be mitigated.

3. Describe the public involvement for this project.

The public will be notified in the following manners to comment on this current EA, the proposed action, and alternatives:

- Two public notices in each of these papers: *The Missoulian, Daily Inter Lake,* and the *Lake County Leader;*
- One statewide press release; and
- Public notice on the Fish, Wildlife & Parks web site: *http://fwp.mt.gov*.

Jim Cancroft, Northwest Management, Inc., the forester hired by FWP, will meet with interested parties at West Shore State Park to conduct a tour of sample areas of the proposed project at 10:00 a.m. on Thursday, September 20, and Saturday, September 29, 2007. Interested persons should meet in the boat trailer parking lot. Portions of the West Shore State Park thinning area, also representative of the other two parks, will be marked so that the public can better assess the proposed project**.**

This level of public notice and participation is appropriate for a project of this scope, having minor impacts, many of which can be mitigated.

4. What was the duration of the public comment period?

The public comment period will extend for (30) thirty days, from September 5 through 5:00 p.m., October 5, 2007. Written comments can be mailed or e-mailed to the following addresses:

West Shore, Finley Point & Lake Mary Ronan State Parks
Forest Thinning Project
Montana Fish, Wildlife & Parks
Region 1 Headquarters
490 N. Meridian Road
Kalispell, MT 59901

Or e-mail comments to: Jerry Sawyer - jsawyer@mt.gov
or
Jim Cancroft - nwimanage@montana.com

GLOSSARY OF TERMS

Affected Environment – The aspects of the human environment that may change as a result of an agency action.

Alternative – A different approach to achieve the same objective or result as the proposed action.

Categorical Exclusion – A level of environmental review for agency action that does not individually, collectively, or cumulatively cause significant impacts to the human environment, as determined by rulemaking or programmatic review, and for which an EA or EIS is not required.

Cumulative Impacts – Impacts to the human environment that individually may be minor for a specific project, but when considered in relation to other actions may result in significant impacts.

Direct Impacts – Primary impacts that have a direct cause and effect relationship with a specific action, i.e., they occur at the same time and place as the action that causes the impact.

Environmental Assessment (EA) – The appropriate level of environmental review for actions that either do not significantly affect the human environment or for which the agency is uncertain whether an environmental impact statement (EIS) is required.

Environmental Assessment Checklist – An EA checklist is a standard form of an EA, developed by an agency for actions that generally produce minimal impacts.

Environmental Impact Statement (EIS) – A comprehensive evaluation of the impacts to the human environment that likely would result from an agency action or reasonable alternatives to that action. An EIS also serves as a public disclosure of agency decision-making. Typically, an EIS is prepared in two steps. The Draft EIS is a preliminary detailed written statement that facilitates public review and comment. The Final EIS is a completed written statement that includes a summary of major conclusions and supporting information from the draft EIS, responses to substantive comments received on the draft EIS, a list of all comments on the draft EIS, and any revisions made to the draft EIS and an explanation of the agency's reasons for its decision.

Environmental Review – An evaluation, prepared in compliance with the provisions of MEPA and the MEPA Model Rules, of the impacts to the human environment that may result as a consequence of an agency action.

Human Environment – Those attributes, including but not limited to biological, physical, social, economic, cultural, and aesthetic factors, that interrelate to form the environment.

Long-term Impact – An impact, which lasts well beyond the period of the initial project.

Mitigated Environmental Assessment – The appropriate level of environmental review for actions that normally would require an EIS, except that the state agency can impose designs,

enforceable controls, or stipulations to reduce the otherwise significant impacts to below the level of significance. A mitigated EA must demonstrate that: (1) all impacts have been identified, (2) all impacts can be mitigated below the level of significance, and (3) no significant impact is likely to occur.

Mitigation – An enforceable measure(s) designed to reduce or prevent undesirable effects or impacts of the proposed action.

National Environmental Policy Act (NEPA) – The federal counterpart of MEPA that applies only to federal actions.

No-action Alternative – An alternative, required by the MEPA Model Rules for purposes of analysis, that describes the agency action that would result in the least change to the human environment.

Public Participation – The process by which an agency includes interested and affected individuals, organizations, and agencies in decision-making.

Record of Decision – Concise public notice that announces the agency's decision, explains the reason for that decision, and describes any special conditions related to implementation of the decision.

Scoping – The process, including public participation, that an agency uses to define the scope of the environmental review.

Secondary Impacts – Impacts to the human environment that are indirectly related to the agency action, i.e., they are induced by a direct impact and occur at a later time or distance from the triggering action.

Short-term Impact – An impact directly associated with a project that is of relatively short duration.

Significance – The process of determining whether the impacts of a proposed action are serious enough to warrant the preparation of an EIS. An impact may be adverse, beneficial, or both. If none of the adverse impacts are significant, an EIS is not required.

Supplemental Review – A modification of a previous environmental review document (EA or EIS) based on changes in the proposed action, the discovery of new information, or the need for additional evaluation.

Tiering – Preparing an environmental review by focusing specifically on narrow scope of issues because the broader scope of issues was adequately addressed in previous environmental review document(s) that may be incorporated by reference.

Appendix A

Forest Health Prescription for West Shore State Park

Prepared by:

Northwest Management, Inc.
P.O. Box 565
Helena, Montana 59624
406-442-7555
www.consulting-foresters.com

July 10, 2007

Table of Contents

Introduction

NMI professional forestry staff inventoried the park in July of 2007 to obtain data for the preparation of a written Forest Health Management Prescription, a major component of the Park's Forest Management Plan. The State will use the forest health management prescription as a basis for the FA process. Forest measurement plots were sampled on a five-chain by five-chain grid (1 chain = 66 feet). Information was collected on tree growth, size distribution, age, stocking, species composition, disease, and mortality. A computerized program was used to compile, tabulate, and perform statistical analysis on the data collected. The information gathered was used to analyze the current condition of the forest and in turn make recommendations for future vegetation management.

Current Forest Conditions

Stand Structure and Species Composition

The forest vegetation and structure within the West Shore State Park varies considerably depending upon aspect and location. The majority of the park is dominated by 70-110-year-old Douglas fir that has a patchy forest mosaic. Along the western and northern boundaries of the park Douglas fir, western larch and lodgepole pine have created a dense, unhealthy stand with significant tree mortality. A good percentage of the trees within these stands are pole-sized with narrow crowns, show evidence of both larch and Douglas fir mistletoe, and recent bark beetle attacks. Scattered large diameter ponderosa pines are found throughout the park. Overall the Douglas fir averages 8-14 inches in diameter and 40-70 feet tall. Douglas fir is the only conifer regenerating, and is growing in a patchy mosaic.

Trees with a dominant position in the forest overstory tend to be in good condition. Co-dominant and overtopped trees tend to be in fair to poor condition and have live crown ratios of less than 35%. Live crown ratio is the percentage of green crown (foliage) relative to the total height of the tree. For example a 100-foot tree with 50 feet of green branches would have a 50x5 live crown ratio. Dead standing trees (snags) are present but not abundant.

Tree Density

Basal area per acre is the sum of the cross-sectional areas of all trees at breast height within an acre. The overall basal area per acre of West Shore State Park is around 125. Along the northern and western boundaries of the park the basal area is probably over 200. Douglas fir stands with basal areas exceeding 200 sq. ft. per acre are considered extremely susceptible to bark beetle attacks. Ken Gibson, forest entomologist for Region I C.S.F.S., from personal observations states that lowering the basal area by one third to one half in Douglas fir stands with basal areas over 150 significantly lowers the risk of bark beetle attack.

Forest Insects and Diseases

Active forest health agents present in West Shore State Park include dwarf mistletoe, spruce budworm, root rot, bark beetles, engraver beetles, and physical damage from weather and animals. All agents affecting the forested portion of the park are native to the area. Eliminating impacts to individual trees is nearly impossible, but minimizing their scope and impact throughout a forest area is achievable. A significant percentage of the western larch in

the park is infested with dwarf mistletoe. Douglas fir infested with mistletoe is extremely susceptible to bark beetles and the effects of drought. Many areas are at risk of Douglas fir beetle due to high forest densities and the presence of down dead wood. A light spruce budworm infestation was observed in the park. High forest densities in many areas have reduced the vigor of individual trees thereby increasing their vulnerability to damaging forest insects and disease problems.

Existing Wildfire Fire Potential

Both natural and man-caused fires could affect this area. The mountains that surround the lake make summer thunderstorms common occurrences. Lightning strikes occur often; however, they are usually limited to the higher elevations. The possibility of human-caused fires also exists, especially since this is an area heavily used for recreation. Human-caused fires may result from debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires and downed power lines.

The abundance of human and natural ignition sources and the nature of fuels in this area increase the probability (risk) of wildland fire. Fire behavior characteristics will depend on fuel types and moisture levels, as well as on weather conditions at the time of ignition. Fires that occur during periods of drought with high temperatures, low humidity, and strong winds are likely to be unpredictable and extremely dangerous.

Prevailing summer afternoon winds are often strong, gusty and unpredictable. A fire starting within a mile of the park could produce "firebrands" (pieces of burning vegetation) that are transported by wind (often great distances) and when deposited on flammable material often ignite.

The wildfire hazard is determined by fuel size and abundance, tree density, moisture content, aspect, and slope. The park has a moderate wildfire hazard at this time. Down dead wood is present on a good portion of the forest floor and is comprised mostly of old mistletoe witches brooms. In places the mistletoe infested Douglas fir have grown into dense thickets with numerous dead branches and witches brooms that have the potential to burn with high intensity. Dense thickets of mistletoe infested trees are located on either side of the county road just south of the park entrance and represent a high wildfire hazard. This hazard can be significantly reduced to help protect lives, property and ecological values in the event of a wildfire.

Forest Management Objectives

The goals of Montana Fish, Wildlife & Parks include the following:

1. To maintain or improve the tree health and vigor throughout the park.
2. Reduce the existing wildfire hazard.
3. Reduce tree mortality resulting from forest insect and disease infestations.
4. Maintain and improve the aesthetic value of the park's forest.
5. Restore the park to the historic stand structure of large, open, park-like stands dominated by old growth ponderosa pine, western larch and Douglas fir.

Desired Future Condition

A healthy forest is:

1. Resilient to natural and human disturbance.

2. Biologically diverse.
3. Able to provide a sustained habitat for vegetation, wildlife, and humans.

Creation of healthy forest conditions will achieve each of the stated forest management goals for West Shore State Park. Defining the desired forest condition within the park will help to identify which specific steps are required to move from the existing current condition to the desired future condition. These "steps" will be provided later in this document as specific forest treatment recommendations.

Desired future conditions for West Shore State Park would include a relatively open multi-layered forest overstory with several age classes of trees. The stand would include a higher abundance of ponderosa pine and western larch. Mixed stands are less vulnerable to insect and disease infestations. Open stands are less vulnerable to bark beetles and dwarf mistletoe. Old growth Douglas fir and ponderosa pine would be present throughout the forest. Forest density adjacent to these trees would be reduced to protect them from wildfire and stress associated with inter-competition between crowded trees.

The primary forest health problem in Montana is over-stocking (too many trees per acre). Trees require adequate light, water and nutrients to maintain their health and grow to their biologic potential. If one or more of these elements are missing or insufficient, the tree experiences stress. Stressed trees are vulnerable to insect pests, disease problems and reduced growth rates. Mortality can be high in overstocked stands that have a combination of bark beetles, dwarf mistletoe and drought. Thinning reduces the total number of trees competing for water, allowing residual trees to obtain soil moisture for a longer period during the growing season. Forest productivity and health is enhanced when dense (over-stocked) forests are thinned to reduce competition for soil water. Reducing tree density within the park will reduce stress and increase tree vigor.

Reducing the overall basal area of forest stands will help to maintain the vigor of trees in all size classes. It will also reduce the density of the forest canopy, reducing the potential for a catastrophic crown fire. Creation of small forest openings will encourage the establishment of desirable shade intolerant species such as ponderosa pine and western larch. Over time forest tree species composition will become better balanced and increase forest resilience to insect and disease infestations. Western larch and ponderosa pine are also less vulnerable to damage from low intensity wildfire. Increasing the abundance of these species will increase the natural resilience of forest stands to wildfire. Creating a mosaic of different forest structures with various tree size classes helps creates a visually appealing forest.

Achieving Management Objectives

Focusing long term management of the park forest on the goal of restoring historic stand structures of large, open, park-like forests dominated by large diameter Douglas fir, ponderosa pine and western larch encourages a healthier, more diverse, resilient forest.

If left untreated the park forest will likely continue to experience high rates of mortality due to insect and disease infestations and overcrowding. Forest areas will remain susceptible to a stand replacing wildfire. Conifer regeneration will continue to be limited to Douglas fir. Ponderosa pine and western larch will continue to decrease in relative abundance. It is

anticipated that the wildfire hazard will significantly increase as down dead wood increases in abundance. Old growth trees will remain vulnerable to a catastrophic crown fire due to the abundance of surface fuels.

Forest Treatment Recommendations

Forest Health Restoration Unit

Project Location (Fig. 1)

The project area is approximately 90 acres and encompasses the entire park with the exception of 11 acres adjacent to Montana Highway 93 and the 39 acres surrounding the campground areas, boat launch, picnic areas and parking areas.

Figure 1. West Shore State Park Treatment Project Map (indicates forest treatment units)

Project Description

Ground slopes within the project area vary from 10-40 %. The primary tree species is Douglas fir. Forest structure is multi-layered including mature trees ranging from 8-30 inches in diameter at breast height (DBH), pole sized trees 4-7 inches DBH and seedlings and saplings less than 4 inches in diameter. The existing forest structure is vulnerable to high intensity crown fire. Grasses, shrubs and small trees and low hanging limbs provide a continuous fuel ladder into mature trees. Tree crowns in many areas are spaced less than 10 feet apart which can allow fire to spread from crown to crown.

Treatment Objective

The primary objective is to modify the existing vegetation to mitigate the effects of overstocking, dwarf mistletoe, bark beetles within the park forest and to lower the wildfire hazard. Additional benefits include lowering the competition for soil moisture and nutrients and increasing the vigor of residual trees. Protecting old growth trees and creating conditions favorable for the reestablishment of western larch and ponderosa pine are also desired outcomes of the project. This will be accomplished by selective harvesting of trees in all size classes. Trees to be removed will be those in poor biological condition. No ponderosa pine or western larch will be removed with the exception of trees with mistletoe or recent beetle sign. Healthy ponderosa pine and some western larch will be cleared of competing Douglas fir for 30 to 50 feet. Inter-planting ponderosa pine and western larch in these openings is planned. Standing dead trees (snags) and larger downed logs will be retained when possible.

Tree Marking Guidelines

Trees of all age classes with good crowns and potential for growth and longevity will be left. There are no spacing requirements for retention trees, resulting in a random, patchy forest structure. Leave trees are selected based on species, stem form, genetic traits, and location within the forest canopy. Some trees with dead tops, mistletoe, sweep, forks and crook are intentionally left. These "character trees" add structural diversity to the forest and are often utilized by wildlife. All cut trees will be marked with orange paint or flagging.

Specific timber harvest objectives

1. Create a forest structure that improves forest resilience to dwarf mistletoe, insect infestations, and lowers the wildfire hazard.
2. Maintain the health and vigor of old growth trees.
3. Reduce tree stress by decreasing the number of trees per acre where appropriate.
4. Create small openings to facilitate future planting of western larch and ponderosa pine.

Harvesting Equipment

Selective harvesting of co-dominate, intermediate and overtopped sawlog-sized trees in poor to fair condition by a mechanical harvester is planned. Trees will be transported to and processed at designated landings and all slash will either be piled and burned or chipped.

Desired Future Condition

The resulting forest will be a mosaic of multi-layered forest structures interspersed with small openings. It is estimated that we will remove one third of the merchantable trees. In some areas half the trees will be removed, while in others very few.

Hazard Tree Removal and Visual Enhancement Unit

Project Location
The project area is approximately 39 acres and encompasses the road, picnic areas, campgrounds and boat launch area of the park.

Project Description
Ground slopes within the project area are 5-15%. The primary tree species is Douglas fir. Forest structure is multi-layered including mature trees ranging from 8-30 inches in diameter at breast height (DB11), pole sized trees 4-7 inches DBH and seedlings and saplings less than 4 inches in diameter. The existing forest structure is vulnerable to high intensity crown fire. Grasses, shrubs and small trees and low hanging limbs provide a continuous fuel ladder into mature trees. Tree crowns in many areas are spaced less than 10 feet apart, which can allow fire to spread from crown to crown.

Treatment Objective
Hazard tree removal and visual enhancement:
Protecting old growth trees and creating conditions favorable for the reestablishment of western larch and ponderosa pine are also desired outcomes of the project. This will be accomplished by selective harvesting of trees in all size classes. Trees to be removed will be those in poor biological condition, those that are determined to be potentially hazardous, and those that block some of the views of the lake. No ponderosa pine or western larch will be removed with the exception of beetle-hit trees. Healthy ponderosa pine will be cleared of competing Douglas fir for 30 to 50 feet. Inter-planting ponderosa pine and western larch in these openings is planned. Standing dead trees (snags) and larger downed logs will be retained when possible.

Tree Marking Guidelines
Trees of all age classes with good crowns and potential for growth and longevity will be left. There are no spacing requirements for retention trees, resulting in a random, patchy forest structure. Leave trees are selected based on species, stem form, genetic traits, and location within the forest canopy. Some trees with dead tops, mistletoe, sweep, forks and crook are intentionally left. These "character trees" add structural diversity to the forest and are often utilized by wildlife. All cut trees will be marked with orange paint or flagging.

Specific Timber Harvest Objectives

1. Create a forest structure that improves forest resilience to dwarf mistletoe, insect infestations, and lowers the wildfire hazard.
2. Maintain the health and vigor of old growth trees.
3. Remove trees that are potentially hazardous to park users.
4. Create small openings or lanes that create views of the lake.

Harvesting Equipment
Selective harvesting of co-dominate, intermediate and overtopped sawlog-sized trees in poor to fair condition by a mechanical harvester is planned. Trees will be transported to and processed at designated landings and all slash will either be piled and burned or chipped.

Desired Future Condition
The resulting forest will be a mosaic of multi-layered forest structures interspersed with lanes

or small openings that create views of the lake. It is estimated that one third to one half of the merchantable trees will be removed. In some areas half the trees will be removed, while in others very few.

Roadside Fuel Hazard Reduction Unit

Project Location
The project area is on both sides of Montana Highway 93. Total project size is 10 acres.

Project Description
Ground slopes within the project area are relatively flat, though there is a small swale on both sides of the highway. The primary tree species are Douglas fir, western larch and lodgepole pine. Forest structure is multi-layered including mature trees ranging from 8-20 inches in diameter at breast height (DBI-I), pole sized trees 4-7 inches DBH and seedlings and saplings less than 4 inches in diameter. The existing forest structure is vulnerable to high intensity crown fire. Grasses, shrubs and small trees and low hanging limbs provide a continuous fuel ladder into mature trees. Tree crowns in many areas are spaced less than 10 feet apart, which can allow fire to spread from crown to crown.

Treatment Objective
The primary objective of this treatment is to modify the existing vegetation to reduce the wildfire hazard. Treatment will include tree thinning, tree pruning and disposal of cut trees and limbs from the project areas. Thickets of sapling and pole–sized conifer trees will be thinned to provide 10 feet or greater space between tree crowns. This activity reduces the potential for a crown fire to move laterally between tree crowns. Commercial size trees in poor to fair biological condition will also be removed. All retention trees will be pruned to reduce the probability of a surface fire climbing into tree crowns. All cut trees and limbs will be placed in small piles throughout the project area and allowed to dry.

The fuel hazard reduction treatment is also designed to reduce the risk of beetle-caused tree mortality in the project area. Thinning susceptible forest areas, prior to beetle infestation, can significantly reduce beetle caused mortality by creating environmental conditions less favorable to beetles. Beetles tend to avoid open forests that are warmer, brighter and have more wind movement. However, trees within project areas remain at risk from damaging agents such as insects and disease, fire, drought, or snow and wind breakage.

Tree Thinning Guidelines
All cut trees will be marked with orange paint. Residual trees will include merchantable trees greater than 8" diameter and healthy non-merchantable trees. A healthy non-merchantable tree is defined as being disease free and having a live crown ratio of 35% or greater. Non-merchantable trees will be thinned so that the average distance between tree crowns exceeds 10 feet. This will typically be accomplished with 12-18 foot spacing between tree stems. All cut trees shall be completely severed below the lowest live limb except when prevented by natural obstacles. This inhibits the tree from growing new vegetative material. A live limb is a limb of any size that has green needles attached. Stump height shall not exceed 4 inches above the ground level or 4 inches above natural obstacles and stumps shall be cut flat or with the angle of the slope.

Tree pruning
All leave trees will he pruned to a height of 6-10 feet. A variable random approach will be taken, where the first tree is pruned to 6' and the next to 10', etc. This will insure a lack of uniformity amongst leave trees. All trees less than 25’ will be pruned to one third their total height. Any leave trees less than six feet in height will not be pruned.

Slash Disposal
All cut tree stems, branches, and tops less than 5" in diameter will be placed in piles throughout the project area. Piles shall be constructed by laying limbs, stems, cut boles, and other slash in the pile so as to be perpendicular to the slope and parallel to each other. Piles shall he constructed to facilitate full consumption when burned; this includes cutting slash that creates large air spaces within the pile. Slash piles created by hand will be a minimum of 4 feet tall and 6 feet in diameter. Maximum pile size is 6 feet tall and 8 feet in diameter.

Pile placement needs to be carefully considered. Piles will be located in openings (greater than 10 feet from any leave tree drip line) to avoid scorching leave trees when the piles are burned. Likewise, placing piles on top of old stumps or logs should be avoided to reduce both the amount of smoke and the chance for "creep" when the piles are burned. Tree stems larger than 5" in diameter will be cut into portions less than 6 feet in length and gathered for firewood.

Safety
Safety is a prime concern and the contractor shall conduct the contract work in a safe manner and shall comply with all laws, rules, and regulations relating to the safety of persons and property. The contractor accepts responsibility to prevent accidents to its employees engaged upon or in vicinity of the project area. The contractor shall be solely responsible for the protection and safety of its employees and for daily inspection of the work area and safety equipment. The contractor shall also take all prudent safety measures to protect landowners and members of the public who may visit the project work area. Safety measures may includes road signs to indicate work in progress and marking of known safety hazards.

Weed Management
Spotted knapweed, thistles and hound’s-tongue were observed within project areas. All guidelines and recommendations for managing noxious weeds in Region One's noxious weed management program will be followed. These include:

1. Power washing any vehicles or equipment prior to arrival on the property.
2. Any logging and thinning activities, which disturb mineral soil, will be seeded with a native seed mix recommend by the USDA Natural Conservation.
3. Use a combination of mechanical, biological and chemical controls.

Reducing wildland fuels throughout West Shore State Park will improve access for emergency vehicles and provide a safer working environment for firefighters who may be involved with fire suppression and structure protection near the park. Efforts to reduce the fire hazard and improve overall forest health are intended to have long-term benefits for park visitors and homeowners residing adjacent to the park.

Appendix B

Forest Health Prescription for Finley Point State Park

Prepared by:

Northwest Management, Inc.
P.O. Box 565
Helena, Montana 59624
406-442-7555
www.consulting-foresters.com

July 31, 2007

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Introduction

Northwest Management, Inc. (NMI), a professional forestry consulting firm, was selected by Montana Fish, Wildlife & Parks to develop and implement a Forest Management Plan for Finley Point State Park. The park is a 27.83-acre parcel located on the southeast portion of Flathead Lake, MT. The park includes a portion of Section 18, Township 23 North, Range 19 West.

NMI professional forestry staff inventoried the park in July of 2007 to obtain data for the preparation of a written Forest Health Management Prescription, a major component of the park's Forest Management Plan. The State will use the Forest Health Management Prescription as a basis for the EA process. Forest measurement plots were sampled on a three-chain by three-chain grid (1 chain = 66 feet). Information was collected on tree growth, size distribution, age, stocking, species composition, disease, and mortality. A computerized program was used to compile, tabulate, and perform statistical analysis on the data collected. The information gathered was used to analyze the current condition of the forest, and in turn make recommendations for future vegetation management.

Current Forest Condition

Forest Structure and Species Composition

Forest vegetation in the park is predominately comprised of a mature, moderately dense, single-storied stand of Douglas fir. Ponderosa pine is present though less abundant. Douglas fir in the overstory averages 12-18 inches in diameter at breast height and 65-85 feet tall. There are older and larger (20 to 40 inches in diameter) Douglas fir are present throughout the park. Scattered large diameter ponderosa pines are also present throughout the park. The majority of the ponderosa pine are surrounded by Douglas fir seedlings and saplings. Mature ponderosa pine in the overstory average 15-22 inches in diameter at breast height and range from 80-100 feet in height. Conifer regeneration is sparse under the closed canopy of the mature Douglas fir, though scattered clumps of seedling and sapling-sized Douglas fir are present in open areas. Ponderosa pine and western larch regeneration is absent in most areas.

Trees with a dominant position in the forest overstory tend to be in good condition. Co-dominant and overtopped trees tend to be in fair to poor condition and many have live crown ratios of less then 35%. Live crown ratio is the percentage of green crown (foliage) relative to the total height of the tree. For example a 100-foot tree with 50 feet of green branches would have a 50% live crown ratio. Dead standing trees (snags) are present but not abundant.

Tree Density

Basal area per acre is the sum of the cross-sectional areas of all trees at breast height within an acre. The basal area per acre of the park forest is over 160. Douglas fir stands with basal areas exceeding 200 sq. ft. per acre are considered extremely susceptible to bark beetle attacks. Many areas within Finely State Park exceed this threshold value. Ken Gibson, forest entomologist for Region 1 U.S.F.S., from personal observations states that lowering the basal area by one third to one half in Douglas fir stands with basal areas over 150 significantly lowers the risk of bark beetle attack.

Forest Insects and Diseases

Active forest health agents present in Finley Point State Park include dwarf mistletoe, spruce budworm, root rot, bark beetles, engraver beetles, and physical damage from weather and animals. All agents affecting the forested portion of the park are native to the area. Eliminating impacts to individual trees is nearly impossible, but minimizing their scope and impact throughout the park forest is achievable. A significant percentage of the Douglas fir is infested with dwarf mistletoe. Douglas fir infested with mistletoe is extremely susceptible to bark beetles and the effects of drought. Many areas are at risk of

Douglas fir beetle due to high forest densities and the presence of down dead wood. A light spruce budworm infestation was observed in the park. High forest densities in many areas have reduced the vigor of individual trees thereby increasing their vulnerability to damaging forest insects and disease problems.

Existing Wildfire Fire Hazard Potential

Both natural and man-caused fires could affect the park. High mountains to the east of the park make summer thunderstorms common occurrences. Lightning strikes occur often; however, they are usually limited to the higher elevations. The possibility of human-caused fires also exists, especially since this is an area heavily used for recreation. Human-caused fires may result from debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires and downed powerlines.

The abundance of human and natural ignition sources and the nature of fuels in this area increase the probability (risk) of wildland fire. Fire behavior characteristics will depend on fuel types and moisture levels, as well as on weather conditions at the time of ignition. Fires that occur during periods of drought with high temperatures, low humidity, and strong winds are likely to be unpredictable and extremely dangerous.

The wildfire hazard is determined by fuel size and abundance, tree density, moisture content, aspect, and slope. The park has a moderate wildfire hazard at this time. Down dead wood is present on a good portion of the forest floor and is comprised mostly of old mistletoe witches brooms. In places the mistletoe infested Douglas fir have grown into dense thickets with numerous dead branches and witches brooms that have the potential to burn with high intensity. Dense thickets of mistletoe infested trees are located on either side of the county road just south of the park entrance and represent a high wildfire hazard. This hazard can be significantly reduced to help protect lives, property and ecological values in the event of a wildfire.

Forest Management Objectives

The goals of Montana Fish, Wildlife and Parks include the following:

1. To maintain or improve the tree health and vigor throughout the park.
2. Reduce the existing wildfire hazard.
3. Reduce tree mortality resulting from forest insect and disease infestations.
4. Maintain and improve the aesthetic value of the park's forest.
5. Restore the park to the historic stand structure of large, open, park-like stands dominated by old growth ponderosa pine, western larch and Douglas fir.

Desired Future Condition

A healthy forest is:

1. Resilient to natural and human disturbance.
2. Biologically diverse.
3. Able to provide a sustained habitat for vegetation, wildlife, and humans.

Creation of healthy forest conditions will achieve each of the stated forest management goals for Finley Point State Park. Defining the desired forest condition within the park will help to identify which specific steps are required to move from the existing current condition to the desired future condition. These "steps" will be provided later in this document as specific forests treatment recommendations.

Desired future conditions for Finley Point State Park would include a relatively open multi-layered forest

overstory with several age classes of trees. The stand would include a higher abundance of ponderosa pine and western larch. Mixed stands are less vulnerable to insect and disease infestations. Open stands are less vulnerable to bark beetles and dwarf mistletoe. Old growth Douglas fir and ponderosa pine would be present throughout the forest. Forest density adjacent to these trees would be reduced to protect them from wildfire and stress associated with inter-competition between crowded trees.

The primary forest health problem in Montana is over-stocking (too many trees per acre). Trees require adequate light, water and nutrients to maintain their health and grow to their biologic potential. If one or more of these elements are missing or insufficient, the tree experiences stress. Stressed trees are vulnerable to insect pests, disease problems and reduced growth rates. Mortality can be high in overstocked stands that have a combination of bark beetles, dwarf mistletoe and drought. Thinning reduces the total number of trees competing for water, allowing residual trees to obtain soil moisture for a longer period during the growing season. Forest productivity and health is enhanced when dense (overstocked) forests are thinned to reduce competition for soil water. Reducing tree density within the park will reduce stress and increase tree vigor.

Reducing the overall basal area of forest stands will help to maintain the vigor of trees in all size classes. It will also reduce the density of the forest canopy, reducing the potential for a catastrophic crown fire. Creation of small forest openings will encourage the establishment of desirable shade intolerant species such as ponderosa pine and western larch. Over time forest tree species composition will become better balanced and increase forest resilience to insect and disease infestations. Western larch and ponderosa pine are also less vulnerable to damage from low intensity wildfire. Increasing the abundance of these species will increase the natural resilience of forest stands to wildfire. Creating a mosaic of different forest structures with various tree size classes helps creates a visually appealing forest.

Achieving Management Objectives

Focusing long term management of the park forest on the goal of restoring historic stand structures of large, open, park-like forests dominated by large diameter Douglas fir, ponderosa pine and western larch encourages a healthier, more diverse, resilient forest.

If left untreated the park forest will likely continue to experience high rates of mortality due to insect and disease infestations and overcrowding. Forest areas will remain susceptible to a stand replacing wildfire. Conifer regeneration will continue to be limited to Douglas fir. Ponderosa pine and western larch will continue to decrease in relative abundance. It is anticipated that the wildfire hazard will significantly increase as down dead wood increases in abundance. Old growth trees will remain vulnerable to a catastrophic crown fire due to the abundance of surface fuels.

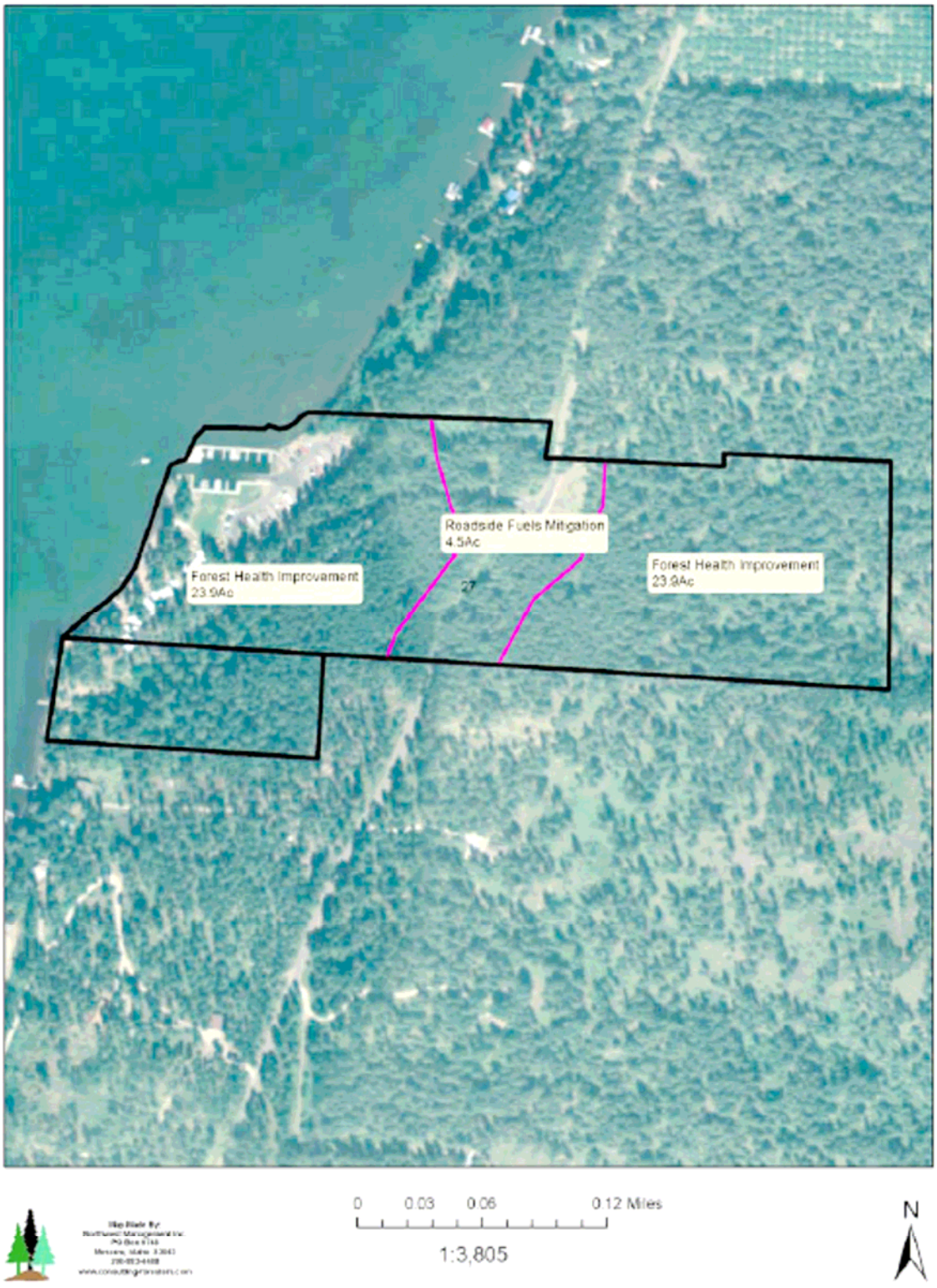
Forest Treatment Recommendations:

Forest Health Restoration Unit

Project Location

The project area is approximately 24 acres and encompasses the entire park with the exception of 100 feet on either side of the county road (Fig.1).

Figure 1. Finley Point State Park Treatment Project Map (indicates forest treatment units)



Project Description

Past fire suppression activities and natural plant succession have resulted in the development of a dense forest stand over the past several decades. Competition between trees for water, soil and light is intensive within most of the proposed project area.

Ground slopes within the project area are relatively flat. The primary tree species is Douglas fir. Forest structure is multi-layered including mature trees ranging from 8-30 inches in diameter at breast height (DBH), pole sized trees 4-7 inches DBH and seedlings and saplings less than 4 inches in diameter. The existing forest structure is vulnerable to high intensity crown fire. Grasses, shrubs and small trees and low hanging limbs provide a continuous fuel ladder into mature trees. Tree crowns in many areas are spaced less than 10 feet apart which can allow fire to spread from crown to crown.

Treatment Objective

The primary objective is to modify the existing vegetation to mitigate the effects of overstocking, dwarf mistletoe, bark beetles within the park forest and to lower the wildfire hazard. Additional benefits include lowering the competition for soil moisture and nutrients and increasing the vigor of residual trees. Protecting old growth trees and creating conditions favorable for the reestablishment of ponderosa pine are also desired outcomes of the project. This will be accomplished by selective harvesting of trees in all size classes. Trees to be removed will be those in poor biological condition. Retaining large diameter Douglas fir and ponderosa pine is a priority. No ponderosa pine will be removed with the exception of beetle-hit trees. Healthy large diameter ponderosa pine will be cleared of competing Douglas fir for 30 to 50 feet. Inter-planting ponderosa pine in openings is planned. Standing dead trees (snags) and larger downed logs will be retained when possible.

Tree Marking Guidelines

Trees of all age classes with good crowns and potential for growth and longevity will be left. There are no spacing requirements for retention trees, resulting in a random, patchy forest structure. Leave trees are selected based on species, stem form, genetic traits, and location within the forest canopy. Some trees with dead tops, mistletoe, sweep, forks and crook are intentionally left. These “character trees” add structural diversity to the forest and are often utilized by wildlife. All cut trees will be marked with orange paint or flagging.

Specific Timber Harvest Objectives

1. Create a forest structure that improves forest resilience to dwarf mistletoe, insect infestations, and lowers the wildfire hazard.
2. Maintain the health and vigor of old growth trees.
3. Reduce tree stress by decreasing the number of trees per acre where appropriate.
4. Create small openings to facilitate future planting of western larch and ponderosa pine.

Harvesting Equipment

Selective harvesting of co-dominate, intermediate and overtopped sawlog-sized trees in poor to fair condition by a mechanical harvester is planned. Trees will be transported to and processed at designated landings and all slash will either be piled and burned or chipped.

Desired Future Condition

The resulting forest will be a mosaic of multi-layered forest structures interspersed with small openings. It is estimated that we will remove one third of the merchantable trees. In some areas half the trees will be removed, while in others very few.

Roadside Fuel Hazard Reduction

Project Location
The project area is one hundred feet on either side of the county road that bisects the park and along portions of the parks entrance. Total project size is 4.5 acres.

Project Description
Ground slopes within the project area are relatively flat. The primary tree species is Douglas fir. Forest structure is multi-layered including mature trees ranging from 8-20 inches in diameter at breast height (DBH), pole sized trees 4-7 inches DBH and seedlings and saplings less than 4 inches in diameter. The existing forest structure is vulnerable to high intensity crown fire. Grasses, shrubs and small trees and low hanging limbs provide a continuous fuel ladder into mature trees. Tree crowns in many areas are spaced less than 10 feet apart which can allow fire to spread from crown to crown.

Treatment Objective
The primary objective of this treatment is to modify the existing vegetation to reduce the wildfire hazard. Treatment will include tree thinning, tree pruning and disposal of cut trees and limbs from the project areas. Thickets of sapling and pole–sized conifer trees will be thinned to provide 10 feet or greater space between tree crowns. This activity reduces the potential for a crown fire to move laterally between tree crowns. Commercial size trees in poor to fair biological condition will also be removed. All retention trees will be pruned to reduce the probability of a surface fire climbing into tree crowns. All cut trees and limbs will be placed in small piles throughout the project area and allowed to dry.

The fuel hazard reduction treatment is also designed to reduce the risk of beetle-caused tree mortality in the project area. Thinning susceptible forest areas, prior to beetle infestation, can significantly reduce beetle caused mortality by creating environmental conditions less favorable to beetles. Beetles tend to avoid open forests that are warmer, brighter and have more wind movement. However, trees within project areas remain at risk from damaging agents such as insects and disease, fire, drought, or snow and wind breakage.

Tree Thinning Guidelines
All cut trees will be marked with orange paint. Residual trees will include merchantable trees greater than 8” diameter and healthy non-merchantable trees. A healthy non-merchantable tree is defined as being disease free and having a live crown ratio of 35% or greater. Non-merchantable trees will be thinned so that the average distance between tree crowns exceeds 10 feet. This will typically be accomplished with 12-18 foot spacing between tree stems. All cut trees shall be completely severed below the lowest live limb except when prevented by natural obstacles. This inhibits the tree from growing new vegetative material. A live limb is a limb of any size that has green needles attached. Stump height shall not exceed 4 inches above the ground level or 4 inches above natural obstacles and stumps shall be cut flat or with the angle of the slope.

Tree pruning
All leave trees will be pruned to a height of 6-10 feet. A variable random approach will be taken, where the first tree is pruned to 6 feet and the next to 10 feet, etc. This will insure a lack of uniformity amongst leave trees. All trees less than 25 feet will be pruned to one third their total height. Any leave trees less than 6 feet in height will not be pruned.

Slash Disposal
All cut tree stems, branches, and tops, less than 5” in diameter will be placed in piles throughout the project area. Piles shall be constructed by laying limbs, stems, cut boles, and other slash in the pile so as

to be perpendicular to the slope and parallel to each other. Piles shall be constructed to facilitate full consumption when burned; this includes cutting slash that creates large air spaces within the pile. Slash piles created by hand will be a minimum of 4 feet tall and 6 feet in diameter. Maximum pile size is 6 feet tall and 8 feet in diameter.

Pile placement needs to be carefully considered. Piles will be located in openings (greater than 10 feet from any leave tree drip line) to avoid scorching leave trees when the piles are burned. Likewise, placing piles on top of old stumps or logs should be avoided to reduce both the amount of smoke and the chance for "creep" when the piles are burned. Tree stems larger than 5" in diameter will be cut into portions less than 6 feet in length and gathered for firewood.

Safety

Safety is a prime concern and the contractor shall conduct the contract work in a safe manner and shall comply with all laws, rules, and regulations relating to the safety of persons and property. The contractor accepts responsibility to prevent accidents to its employees engaged upon or in vicinity of the project area. The contractor shall be solely responsible for the protection and safety of its employees and for daily inspection of the work area and safety equipment. The contractor shall also take all prudent safety measures to protect landowners and members of the public who may visit the project work area. Safety measures may includes road signs to indicate work in progress and marking of known safety hazards.

Weed Management

Spotted knapweed, thistles and hound's-tongue were observed within project areas. All guidelines and recommendations for managing noxious weeds in Region One's noxious weed management program will be followed. These include:

1. Power washing any vehicles or equipment prior to arrival on the property.
2. Any logging and thinning activities, which disturb mineral soil, will be seeded with a native seed mix recommend by the USDA Natural Conservation.
3. Use a combination of mechanical, biological and chemical controls.

Reducing wildland fuels throughout Finley Point State Park will improve access for emergency vehicles and provide a safer working environment for firefighters who may be involved with fire suppression and structure protection near the park. Efforts to reduce the fire hazard and improve overall forest health are intended to have long-term benefits for park visitors and homeowners residing adjacent to the park.

Appendix C

Forest Health Prescription for Lake Mary Ronan State Park

Prepared by:

Northwest Management, Inc.
P.O. Box 565
Helena, Montana 59624
406-442-7555
www.consulting-foresters.com

Table of Contents

Introduction

Northwest Management, Inc. (NMI), a professional forestry consulting firm, was selected by Montana Fish, Wildlife & Parks to develop and implement a Forest Management Plan for Lake Mary Ronan State Park. The park is a 119.4-acre parcel located on the eastern portion of Lake Mary Ronan, MT. The park includes portions of Sections 13 and 14, Township 25 North, Range 22 West.

NMI professional forestry staff inventoried the park in July of 2007 to obtain data for the preparation of a written Forest Health Management Prescription, a major component of the park's Forest Management Plan. The State will use the forest health management prescription as a basis for the EA process. Forest measurement plots were sampled on a four-chain by four-chain grid (1 chain= 66 feet). Information was collected on tree growth, size distribution, age, stocking, species composition, disease, and mortality. A computerized program was used to compile, tabulate, and perform statistical analysis on the data collected. The information gathered was used to analyze the current condition of the forest and, in turn, make recommendations for future vegetation management. For management purposes NMI divided the park into two stands, Stand 1 being the approximately 51-acre (cut-over) parcel that was previously Plum Creek Timber land, and Stand 2 being the remaining 68 acres.

Current Forest Condition

Stand Structure and Species Composition

The forest vegetation within Stand 1 is predominately comprised of a scattered mature overstory of defective and mistletoe infested Douglas fir and an understory of Douglas fir seedlings and saplings. Mature scattered medium sawtimber size western larch is a minor component. The Douglas fir averages 10-15 inches in diameter and 55-75 feet tall. Conifer regeneration is patchy. The majority of the Douglas fir leave trees have narrow sparse crowns, are highly defective and infested with mistletoe.

The forest vegetation within Stand 2 is predominately comprised of a mature, moderately dense, single storied stand of Douglas fir with a minor component of western larch. The Douglas fir averages 13-18 inches in diameter and 60-80 feet high. Conifer regeneration is sparse under the closed canopy of the mature Douglas fir, though scattered clumps of seedling and sapling-sized Douglas fir are present in open areas.

Trees with a dominant position in the forest overstory tend to be in good condition. Co-dominant and overtopped trees tend to be in fair to poor condition and have live crown ratios of less then 35%. Live crown ratio is the percentage of green crown (foliage) relative to the total height of the tree. For example a 100-foot tree with 50 feet of green branches would have a 50% live crown ratio. Dead standing trees (snags) are present but not abundant.

Tree Density

Basal area per acre is the sum of the cross-sectional areas of all trees at breast height within an acre. The basal area per acre of Stand 1 is 65 while it is over 140 in Stand 2. Douglas fir stands with basal areas exceeding 200 sq. ft. per acre are considered extremely susceptible to bark beetle attacks. Many areas within Stand 2 of Lake Mary Ronan State Park exceed this threshold value. Ken Gibson, forest entomologist for Region 1 U.S.F.S., from personnel observations states that lowering the basal area by one third to one half in Douglas fir stands with basal areas over 150 significantly lowers the risk of bark beetle attack.

Forest Insects and Diseases

Active forest health agents present in Lake Mary Ronan State Park include dwarf mistletoe, spruce budworm, root rot, bark beetles, engraver beetles, and physical damage from weather and animals. All agents affecting the forested portion of the park are native to the area. Eliminating impacts to individual trees is nearly impossible, but minimizing their scope and impact throughout a forest area is achievable.

A significant percentage of the Douglas fir throughout both stands is infested with dwarf mistletoe. Douglas fir infested with mistletoe is extremely susceptible to bark beetles and the effects of drought. Many areas are at risk of Douglas fir beetle due to high forest densities and the presence of down dead wood. A light spruce budworm infestation was observed in the park. High forest densities in many areas have reduced the vigor of individual trees thereby increasing their vulnerability to damaging forest insects and disease problems.

Existing Wildfire Fire Potential

Both natural and man-caused fires could affect this area. The mountains that surround the lake make summer thunderstorms common occurrences. Lightning strikes occur often; however, they are usually limited to the higher elevations. The possibility of human-caused fires also exists, especially since this is an area heavily used for recreation. Human-caused fires may result from debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires and downed power lines.

The abundance of human and natural ignition sources and the nature of fuels in this area increase the probability (risk) of wildland fire. Fire behavior characteristics will depend on fuel types and moisture levels, as well as on weather conditions at the time of ignition. Fires that occur during periods of drought with high temperatures, low humidity, and strong winds are likely to be unpredictable and extremely dangerous.

Prevailing summer afternoon winds are often strong, gusty and unpredictable. A fire starting within a mile of the park could produce “firebrands” (pieces of burning vegetation) that are transported by wind (often great distances) and when deposited on flammable material often ignite.

The wildfire hazard is determined by fuel size and abundance, tree density, moisture content, aspect, and slope. The park has a moderate wildfire hazard at this time. Down dead wood is present on a good portion of the forest floor and is comprised mostly of old mistletoe witches brooms. In places the mistletoe infested Douglas fir have grown into dense thickets with numerous dead branches and witches brooms that have the potential to burn with high intensity. Dense thickets of mistletoe infested trees located on either side of the county road just south of the park entrance and represent a high wildfire hazard. This hazard can be significantly reduced to help protect lives, property and ecological values in the event of a wildfire.

Forest Management Objectives

The goals of Montana Fish, Wildlife & Parks include the following:

1. To maintain or improve the tree health and vigor throughout the park.
2. Reduce the existing wildfire hazard.
3. Reduce tree mortality resulting from forest insect and disease infestations.
4. Maintain and improve the aesthetic value of the park’s forest.
5. Restore the park to the historic stand structure of large, open, park-like stands dominated by old growth ponderosa pine, western larch and Douglas fir.

Desired Future Condition

A healthy forest is:

1) Resilient to natural and human disturbance.
2) Biologically diverse.
3) Able to provide a sustained habitat for vegetation, wildlife, and humans.

Creation of healthy forest conditions will achieve each of the stated forest management goals for Lake Mary Ronan State Park. Defining the desired forest condition within the park will help to identify which specific steps are required to move from the existing current condition to the desired future condition. These "steps" will be provided later in this document as specific forests treatment recommendations.

Desired future conditions for Lake Mary Ronan State Park would include a relatively open multi-layered forest overstory with several age classes of trees. The stand would include a higher abundance of ponderosa pine and western larch. Mixed stands are less vulnerable to insect and disease infestations. Open stands are less vulnerable to bark beetles and dwarf mistletoe. Old growth Douglas fir and ponderosa pine would be present throughout the forest. Forest density adjacent to these trees would be reduced to protect them from wildfire and stress associated with inter-competition between crowded trees.

The primary forest health problem in Montana is over-stocking (too many trees per acre). Trees require adequate light, water and nutrients to maintain their health and grow to their biologic potential. If one or more of these elements are missing or insufficient, the tree experiences stress. Stressed trees are vulnerable to insect pests, disease problems and reduced growth rates. Mortality can be high in overstocked stands that have a combination of bark beetles, dwarf mistletoe and drought. Thinning reduces the total number of trees competing for water allowing residual trees to obtain soil moisture for a longer period during the growing season. Forest productivity and health is enhanced when dense (overstocked) forests are thinned to reduce competition for soil water. Reducing tree density within the park will reduce stress and increase tree vigor.

Reducing the overall basal area of forest stands will help to maintain the vigor of trees in all size classes. It will also reduce the density of the forest canopy reducing the potential for a catastrophic crown fire. Creation of small forest openings will encourage the establishment of desirable shade intolerant species such as ponderosa pine and western larch. Over time forest tree species composition will become better balanced and increase forest resilience to insect and disease infestations. Western larch and ponderosa pine are also less vulnerable to damage from low intensity wildfire. Increasing the abundance of these species will increase the natural resilience of forest stands to wildfire. Creating a mosaic of different forest structures with various tree size classes helps creates a visually appealing forest.

Achieving Management Objectives

Focusing long term management of the park forest on the goal of restoring historic stand structures of large, open, park-like forests dominated by large diameter Douglas fir, ponderosa pine and western larch encourages a healthier, more diverse, resilient forest.

If left untreated the park forest will likely continue to experience high rates of mortality due to insect and disease infestations and overcrowding. Forest areas will remain susceptible to a stand replacing wildfire. Conifer regeneration will continue to be limited to Douglas fir. Ponderosa pine and western larch will continue to decrease in relative abundance. It is anticipated that the wildfire hazard will significantly increase as down dead wood increases in abundance. Old growth trees will remain vulnerable to a

catastrophic crown fire due to the abundance of surface fuels.

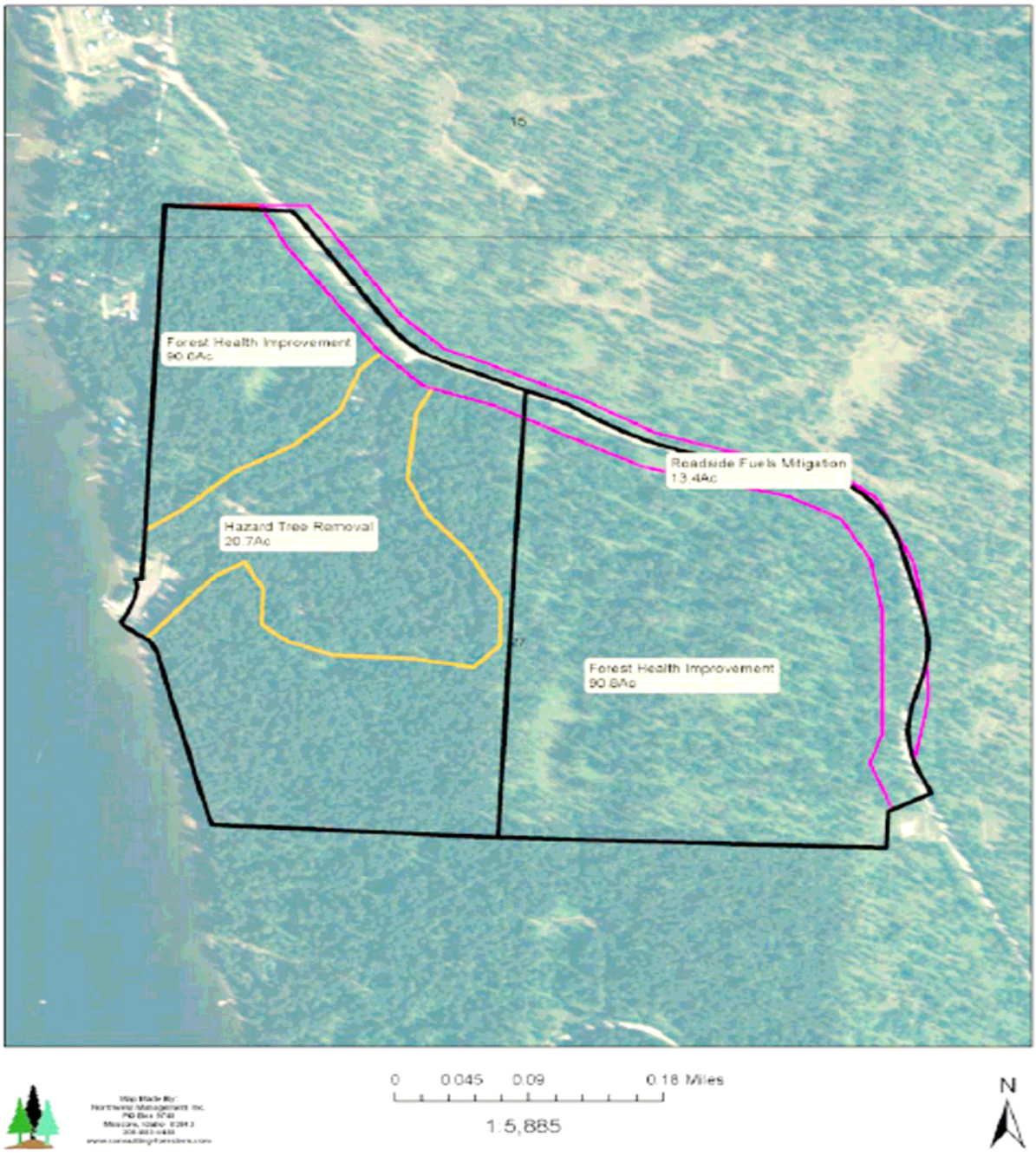
Forest Treatment Recommendations

Forest Health Restoration Project

Project Location (Fig. 1.)

The project area is approximately 91 acres and encompasses the entire park with the exception of 13.4 acres adjacent to the county road and the 21 acres surrounding the campground area.

Figure 1. Lake Mary Ronan State Park Treatment Projects Map (indicates forest treatment units)



Project Description

Ground slopes within the project area are relatively flat. The primary tree species is Douglas fir. Forest structure is multi-layered including mature trees ranging from 8-30 inches in diameter at breast height (DBH), pole sized trees 4-7 inches DBH and seedlings and saplings less than 4 inches in diameter. The existing forest structure is vulnerable to high intensity crown fire. Grasses, shrubs and small trees and low hanging limbs provide a continuous fuel ladder into mature trees. Tree crowns in many areas are spaced less than 10 feet apart which can allow fire to spread from crown to crown. Old logging has occurred throughout the park. Old western larch stumps are common.

Treatment Objective

The primary objective is to modify the existing vegetation to mitigate the effects of overstocking, dwarf mistletoe, bark beetles within the park forest and to lower the wildfire hazard. Additional benefits include lowering the competition for soil moisture and nutrients and increasing the vigor of residual trees. Protecting old growth trees and creating conditions favorable for the reestablishment of western larch and ponderosa pine are also desired outcomes of the project. This will be accomplished by selective harvesting of trees in all size classes. Trees to be removed will be those in poor biological condition. No ponderosa pine or western larch will be removed with the exception of beetle-hit trees. Healthy western larch will be cleared of competing Douglas fir for 30 to 50 feet. Inter-planting ponderosa pine and western larch in these openings is planned. Standing dead trees (snags) and larger downed logs will be retained when possible.

Tree Marking Guidelines

Trees of all age classes with good crowns and potential for growth and longevity will be left. There are no spacing requirements for retention trees, resulting in a random, patchy forest structure. Leave trees are selected based on species, stem form, genetic traits, and location within the forest canopy. Some trees with dead tops, mistletoe, sweep, forks and crook are intentionally left. These “character trees” add structural diversity to the forest and are often utilized by wildlife. All cut trees will be marked with orange paint or flagging.

Specific Timber Harvest Objectives

1. Create a forest structure that improves forest resilience to dwarf mistletoe, insect infestations, and lowers the wildfire hazard.
2. Maintain the health and vigor of old growth trees.
3. Reduce tree stress by decreasing the number of trees per acre where appropriate.
4. Create small openings to facilitate future planting of western larch and ponderosa pine.

Harvesting Equipment

Selective harvesting of co-dominate, intermediate and overtopped sawlog-sized trees in poor to fair condition by a mechanical harvester is planned. Trees will be transported to and processed at designated landings and all slash will either be piled and burned or chipped.

Desired Future Condition

The resulting forest will be a mosaic of multi-layered forest structures interspersed with lanes or small openings that create views of the lake. It is estimated that one third to one half of the merchantable trees will be removed. In some areas half the trees will be removed, while in others very few.

Hazard Tree Removal and Visual Enhancement

Project Location

The project area is approximately 21 acres and encompasses the road, picnic areas, campground and boat launch area of the park.

Project Description
Ground slopes within the project area are relatively flat. The primary tree species is Douglas fir. Forest structure is multi-layered including mature trees ranging from 8-30 inches in diameter at breast height (DBH), pole sized trees 4-7 inches DBH and seedlings and saplings less than 4 inches in diameter. The existing forest structure is vulnerable to high intensity crown fire. Grasses, shrubs and small trees and low hanging limbs provide a continuous fuel ladder into mature trees. Tree crowns in many areas are spaced less than 10 feet apart, which can allow fire to spread from crown to crown.

Treatment Objective
The primary objective is to remove hazard trees, create small openings or lanes to open up views of the lake and to modify the existing vegetation to mitigate the effects of overstocking, dwarf mistletoe, bark beetles within the park forest and to lower the wildfire hazard. Additional benefits include lowering the competition for soil moisture and nutrients and increasing the vigor of residual trees. Protecting old growth trees and creating conditions favorable for the reestablishment of western larch and ponderosa pine are also desired outcomes of the project. This will be accomplished by selective harvesting of trees in all size classes. Trees to be removed will be those in poor biological condition, those that are determined to be potentially hazardous, and those that block some of the views of the lake. No ponderosa pine or western larch will be removed with the exception of beetle-hit trees. Healthy western larch will be cleared of competing Douglas fir for 30 to 50 feet. Inter-planting ponderosa pine and western larch in these openings is planned. Standing dead trees (snags) and larger downed logs will be retained when possible.

Tree Marking Guidelines
Trees of all age classes with good crowns and potential for growth and longevity will be left. There are no spacing requirements for retention trees, resulting in a random, patchy forest structure. Leave trees are selected based on species, stem form, genetic traits, and location within the forest canopy. Some trees with dead tops, mistletoe, sweep, forks and crook are intentionally left. These “character trees” add structural diversity to the forest and are often utilized by wildlife. All cut trees will be marked with orange paint or flagging.

Specific Timber Harvest Objectives
1. Create a forest structure that improves forest resilience to dwarf mistletoe, insect infestations, and lowers the wildfire hazard.
2. Maintain the health and vigor of old growth trees.
3. Remove trees that are potentially hazardous to park users.
4. Create small openings or lanes that create views of the lake.

Roadside Fuel Hazard Reduction

Project Location
The project area is one hundred feet on the west side of the county road. Total project size is 13.4 acres.

Project Description
Ground slopes within the project area are relatively flat. The primary tree species is Douglas fir. Forest structure is multi-layered including mature trees ranging from 8-20 inches in diameter at breast height (DBH), pole sized trees 4-7 inches DBH and seedlings and saplings less than 4 inches in diameter. The existing forest structure is vulnerable to high intensity crown fire. Grasses, shrubs and small trees and low hanging limbs provide a continuous fuel ladder into mature trees. Tree crowns in many areas are spaced less than 10 feet apart which can allow fire to spread from crown to crown.

Treatment Objective
The primary objective of this treatment is to modify the existing vegetation to reduce the wildfire hazard. 7

Treatment will include tree thinning, tree pruning and disposal of cut trees and limbs from the project areas. Thickets of sapling and pole-sized conifer trees will be thinned to provide 10 feet or greater space between tree crowns. This activity reduces the potential for a crown fire to move laterally between tree crowns. Commercial size trees in poor to fair biological condition will also be removed. All retention trees will be pruned to reduce the probability of a surface fire climbing into tree crowns. All cut trees and limbs will be placed in small piles throughout the project area and allowed to dry.

The fuel hazard reduction treatment is also designed to reduce the risk of beetle-caused tree mortality in the project area. Thinning susceptible forest areas, prior to beetle infestation, can significantly reduce beetle caused mortality by creating environmental conditions less favorable to beetles. Beetles tend to avoid open forests that are warmer, brighter and have more wind movement. However, trees within project areas remain at risk from damaging agents such as insects and disease, fire, drought, or snow and wind breakage.

Tree Thinning Guidelines
All cut trees will be marked with orange paint. Residual trees will include merchantable trees greater than 8" diameter and healthy non-merchantable trees. A healthy non-merchantable tree is defined as being disease free and having a live crown ratio of 35% or greater. Non-merchantable trees will be thinned so that the average distance between tree crowns exceeds 10 feet. This will typically be accomplished with 12-18 foot spacing between tree stems. All cut trees shall be completely severed below the lowest live limb except when prevented by natural obstacles. This inhibits the tree from growing new vegetative material. A live limb is a limb of any size that has green needles attached. Stump height shall not exceed 4 inches above the ground level or 4 inches above natural obstacles and stumps shall be cut flat or with the angle of the slope.

Tree pruning
All leave trees will be pruned to a height of 6-10 feet. A variable random approach will be taken, where the first tree is pruned to 6 feet and the next to 10 feet, etc. This will insure a lack of uniformity amongst leave trees. All trees less than 25 will be pruned to one third their total height. Any leave trees less than six feet in height will not be pruned.

Slash Disposal
All cut tree stems, branches, and tops, less than 5" in diameter will be placed in piles throughout the project area. Piles shall be constructed by laying limbs, stems, cut boles, and other slash in the pile so as to be perpendicular to the slope and parallel to each other. Piles shall be constructed to facilitate full consumption when burned; this includes cutting slash that creates large air spaces within the pile. Slash piles created by hand will be a minimum of 4 feet tall and 6 feet in diameter. Maximum pile size is 6 feet tall and 8 feet in diameter.

Pile placement needs to be carefully considered. Piles will be located in openings (greater than 10 feet from any leave tree drip line) to avoid scorching leave trees when the piles are burned. Likewise, placing piles on top of old stumps or logs should be avoided to reduce both the amount of smoke and the chance for "creep" when the piles are burned. Tree stems larger than 5" in diameter will be cut into portions less than 6 feet in length and gathered for firewood.

Safety
Safety is a prime concern and the contractor shall conduct the contract work in a safe manner and shall comply with all laws, rules, and regulations relating to the safety of persons and property. The contractor

accepts responsibility to prevent accidents to its employees engaged upon or in vicinity of the project area. The contractor shall be solely responsible for the protection and safety of its employees and for daily inspection of the work area and safety equipment. The contractor shall also take all prudent safety measures to protect landowners and members of the public who may visit the project work area. Safety measures may includes road signs to indicate work in progress and marking of known safety hazards. 8

Weed Management

Spotted knapweed, thistles and hound's-tongue were observed within project areas. All guidelines and recommendations for managing noxious weeds in Region One's noxious weed management program will be followed. These include:

1. Power washing any vehicles or equipment prior to arrival on the property.
2. Any logging and thinning activities, which disturb mineral soil, will be seeded with a native seed mix recommend by the USDA Natural Conservation.
3. Use a combination of mechanical, biological and chemical controls.

Reducing wildland fuels throughout Lake Mary Ronan State Park will improve access for emergency vehicles and provide a safer working environment for firefighters who may be involved with fire suppression and structure protection near the park. Efforts to reduce the fire hazard and improve overall forest health are intended to have long-term benefits for park visitors and homeowners residing adjacent to the park.

Appendix D

Tourism Report – pending. Will be added prior to any decision notice; however, no significant impacts are anticipated

Appendix E

SHPO Clearance Letter

From: Murdo, Damon
Sent: Friday, August 31, 2007 8:43 AM
To: Ivy, Nancy
Subject: RE: R-1 Forestry Management Project Draft EA

August 31, 2007

Nancy Ivy
FWP
490 N Meridian Road
Kalispell MT 59901

RE: R-1 FORESTRY MANAGEMENT PROJECT. SHPO Project #: 2007082403

Dear Nancy:

I have conducted a cultural resource file search for the above-cited projects. According to our records there have been no previously recorded sites within the designated search locales. The absence of cultural properties in the area does not mean that they do not exist but rather may reflect the absence of any previous cultural resource inventory in the area, as our records indicated none.

We feel that there is a low likelihood cultural properties will be impacted. We, therefore, feel that a recommendation for a cultural resource inventory is unwarranted at this time. However, should cultural materials be inadvertently discovered during this project we would ask that our office be contacted and the site investigated. Thank you for consulting with us.

If you have any further questions or comments you may contact me at (406) 444-7767 or by e-mail at dmurdo@mt.gov <mailto:dmurdo@mt.gov>.

Sincerely,

Damon Murdo
Cultural Records Manager

File: FWP/PARKS/2007

Appendix F

List of Native Forest Grass Seed Mix:

- 15% Western Wheatgrass (S)
- 35% Bluebunch Wheatgrass (B)
- 40% Mountain Brome (B)
- 10% Rough Fescue (B)
- 25-30 lbs. per acre

B = bunch-type grass
S = sod-forming grass